Appendix A: Historical Perspective and Legislative History

Historical Perspective

There were a number of key events that prompted creation of the CCT Program and impacted its focus over the course of the five solicitations. The roots of the CCT Program can be traced to the acid rain debates of the early 1980s, culminating in U.S. and Canadian envoys recommending a five year, $5 billion U.S. effort to curb precursors to acid rain formation—SO_2 and NO_x. This recommendation was adopted and became a presidential initiative in March 1987.

As a part of the response to the recommendations of the *Special Envoys on Acid Rain* in April 1987, the President directed the Secretary of Energy to establish a panel to advise the President on innovative clean coal technology activities. This panel was the Innovative Control Technology Advisory Panel. As a part of the panel's activities, the state and federal incentive subcommittee prepared a report, *Report to the Secretary of Energy Concerning Commercialization Incentives*, that addressed actions that states could take to provide incentives for demonstrating and deploying clean coal technologies. The panel determined that demonstration and deployment should be managed through both state and federal initiatives.

In the same time frame, the Vice President's Task Force on Regulatory Relief (later referred to as the Presidential Task Force on Regulatory Relief) was established. Among other things, the task force was asked to examine incentives and disincentives to the commercial realization of new clean coal technologies. The task force also examined cost-effective emissions reduction measures that might be inhibited by various federal, state, and local regulations. The task force recommended that preference be given to projects located in states that offer certain regulatory incentives to encourage such technologies. This recommendation was accepted and became part of the project selection considerations beginning with CCT-II.

Initial CCT Program emphasis was on controlling SO_2 and NO_x emissions from existing coal-based power generators. Approaches demonstrated through the program were coal processing to produce clean fuels, combustion modification to control emissions, postcombustion cleanup of flue gas, and repowering with advanced power generation systems. These early efforts (projects resulting from the first three solicitations) produced a suite of cost-effective compliance options available today to address acid rain concerns.

As the CCT Program evolved, work began on drafting what was to become the Clean Air Act Amendments of 1990. Through a dialog with EPA and Congress, the program was able to remain responsive to shifts in environmental emphasis. Also, projects in place enabled CAAA architects to have access to real-time data on emission control capabilities while structuring proposed acid rain regulations under Title IV of the CAAA. Aside from acid rain, there was an emerging issue in the area of hazardous air pollutants (HAPs), also referred to as air toxics. Title III of the CAAA listed 189 airborne compounds subject to control, including trace elements and volatile and semi-volatile compounds. To assess the impacts on coal-based power generation, CCT Program projects were leveraged to obtain data through an integrated effort among DOE, EPA, EPRI, and the Utility Air Regulatory Group. Through this effort, concerns about HAPs relative to coal-based power generation have been significantly mitigated, enabling focus on but a few flue gas constituents. Also, because NO_x is a precursor to ozone formation, the presence of NO_x in ozone nonattainment areas, even at low levels, became an issue. This precipitated action in the CCT Program to include technologies capable of deep NO_x reduction in the portfolio of technologies sought.

In the course of the last two solicitations of the CCT Program, a number of energy and environmental considerations combined to change the emphasis toward seeking high-efficiency, very-low-emission power generation technology. Energy demand

projections in the United States showed the need for continued reliance on coal-based power generation, with significant growth required into the 21st century. The CAAA, however, capped SO_2 emissions at year 2000 levels, and NO_x continued to receive increased attention relative to ozone nonattainment. Furthermore, particulate emissions were coming under increased scrutiny because of correlations with lung disorders and the tendency for toxic compounds to adhere to particulate matter. Added to these concerns was the growing concern over global warming, and more specifically, the CO_2 produced from burning fossil fuels. Coal became a primary target because of the high carbon-to-hydrogen ratio relative to natural gas, resulting in somewhat higher CO_2 emissions per unit of energy produced. However, coal is the fuel of choice (if not necessity) for many developing countries where projected growth in electric power generation is the greatest. The path chosen to respond to these considerations was to pursue advanced power generation systems that could provide major enhancements in efficiency and control SO_2, NO_x, and particulates without introducing external parasitic control devices. (Increased efficiency translates to less coal consumption per unit of energy produced.) As a result, a number of advanced power generation projects were undertaken, representing pioneer efforts recognized throughout the world.

Legislative History

The legislation authorizing the CCT Program is found in Public Law 98-473, Joint Resolution Making Continuing Appropriations for Fiscal Year 1985 and for Other Purposes. Title I set aside $750 million of the congressionally rescinded $5.375 billion of the Synthetic Fuels Corporation into a special U.S. Treasury account entitled the "Clean Coal Technology Reserve." This account was dedicated to "conducting cost-shared clean coal technology projects for the construction and operation of facilities to demonstrate the feasibility of future commercial applications of such technology." Title III of this act directed the Secretary of Energy to solicit statements of interest in and proposals for clean coal projects. In keeping with this mandate, DOE issued a program announcement, which resulted in the receipt of 176 proposals representing both domestic and international projects with a total estimated cost in excess of $8 billion.

After this significant initial expression of interest in clean coal demonstration projects, Public Law 99-190, enacted December 1985, appropriated $400 million to conduct cost-shared demonstration projects. Of the total appropriated funds, approximately $387 million was made available for cost-shared projects to be selected through a competitive solicitation, or Program Opportunity Notice (PON), referred to as CCT-I. (The remaining funds were required for program direction and the legislatively mandated Small Business Innovation Research Program [SBIR] and Small Business Technology Transfer Program [STTR].)

In a manner similar to the initiation of CCT-I, Congress again directed DOE to solicit information from the private sector in the Department of the Interior and Related Agencies Appropriations Act for FY1987 (Public Law 99-591, enacted October 30, 1986). The information received was to be used to establish the level of potential industrial interest in another solicitation, this time involving clean coal technologies capable of retrofitting, repowering, or modernizing existing facilities. Projects were to be cost-shared, with industry sharing at least 50 percent of the cost. As a result of the solicitation, a total of 39 expressions of interest were received by DOE in January 1987.

On March 18, 1987, the President announced the endorsement of the recommendations of the Special Envoys on Acid Rain, including a $2.5 billion government share of funding for industry/government demonstrations of innovative control technology over a five year period. The Secretary of Energy stated that the department would ask Congress for an additional $350 million in FY1988 and an advanced appropriation of $500 million in FY1989. Additional appropriations of $500 million would be requested in fiscal years 1990, 1991, and 1992. This request was made by the President on April 4, 1987.

Public Law 100-202, enacted December 22, 1987, as amended by Public Law 100-446, appropriated a total of $575 million to conduct CCT-II. About $536 million was for projects, with the remainder for program direction and the SBIR and STTR Programs.

The Department of the Interior and Related Agencies Appropriations Act for FY1989 (Public Law 100-446, enacted September 27, 1988) provided $575 million for necessary expenses associated with clean coal technology demonstrations in the CCT-III solicitation. Of the total funding, about $546 million was made available for cost-sharing projects, with the remainder for program direction and the SBIR and STTR Programs. The act continued the requirement that proposals must demonstrate technologies capable of retrofitting or repowering existing facilities. The statute also authorized the use of Tennessee Valley Authority power program funds as a source of non-

federal cost-sharing, except if provided by annual appropriations acts. In addition, funds borrowed by Rural Electrification Administration)now Rural Utilities Service) electric cooperatives from the Federal Financing Bank became eligible as cost-sharing in the CCT-III solicitation, except if provided by annual appropriations.

In the Department of the Interior and Related Agencies Appropriations Act of 1990 (Public Law 101-121, enacted October 23, 1989), Congress provided $600 million for the CCT-IV solicitation. CCT-IV, according to the act, "shall demonstrate technologies capable of replacing, retrofitting, or repowering existing facilities and shall be subject to all provisos contained under this head in Public Laws 99-190, 100-202 and 100-446 as amended by this Act." About $563 million was made available for federal cofunding of projects selected in CCT-IV, with the remainder for program direction and the SBIR and STTR Programs.

In Public Law 101-121, enacted October 23, 1989, Congress also provided $600 million for the CCT-V solicitation. CCT-V, according to the act, "shall be subject to all provisos contained under this head in Public Laws 99-190, 100-202 and 100-446 as amended by this Act." Approximately $568 million was made available for federal cofunding of projects to be selected in this solicitation, with the remainder again for program direction and the SBIR and STTR Programs.

Subsequent acts (Public Laws 101-164, 101-302, 101-512, and 102-154) modified the schedule for issuing CCT-IV and/or CCT-V PONs and selecting projects. In Public Law 101-512, Congress directed DOE to issue the PON for CCT-IV not later than February 1, 1991, with selections to be made within 8 months. In Public Law 102-154, Congress directed DOE to issue CCT-V PON not later than July 6, 1992, with selections to be made within 10 months. This later act also directed that CCT-V proposals should advance significantly the efficiency and environmental performance of coal-using technologies and be applicable to either new or existing facilities.

Public Laws 101-164, 101-302, 101-512, 103-138, and 103-332 adjusted the rate at which funds were to be made available to the program.

CCT Program funds have been further adjusted through sequestering requirements of the Gramm-Rudman-Hollings Deficit Reduction Act as well as rescissions. Sequestering reduced CCT Program appropriations as follows:

- $2.4 million was sequestered from the $400 million appropriated by Public Law 99-190.
- $2,600 was sequestered from the $575 million appropriated by Public Law 100-202, as amended by Public Law 100-446.
- $2,028 was sequestered from the $575 million appropriated by Public Law 100-446, as amended by Public Law 101-164.
- $455 was sequestered from the $1.2 billion appropriated by Public Law 101-121, as amended by Public Laws 101-512, 102-154, 102-381, 103-138, 103-332, 104-6, 104-208, and 105-18.

Rescissions have reduced CCT Program appropriations as follows:

- $200 million was rescinded by Public Law 104-6.
- $123 million was rescinded by Public Law 104-208.
- $17 million was rescinded by Public Law 105-18.
- $101 million was rescinded by Public Law 105-83.
- $38,000 was rescinded by Public Law 106-113 (general reduction).

In 1998, $40 million of the CCT program funds were deferred by Public Law 105-277. Funds will be restored over a three year period beginning October 1, 1999. Again in 1999, Congress deferred program funds. In Public Law 106-113, Congress deferred $156,000,000 until October 1, 2000.

Exhibit A-1 lists all the key legislation relating to the CCT Program and provides a summary of provisions relating to program funding as well as program implementation. Following this exhibit are funding provisions excerpted from appropriations and other relevant funding-related acts.

Exhibit A-1
CCT Program Legislative History

Public Law	Date Enacted	CCT Round	Program Funding	Implementation Provisions
98-473	10/12/84	Initiation of CCT Program; informational solicitation	Rescinded $750 million of $5.375 billion from the Energy Security Reserve (Synthetic Fuels Corporation) to be deposited in a U.S. Treasury Department account entitled "Clean Coal Technology Reserve" for conducting cost-shared CCT projects for the construction and operation of facilities to demonstrate the feasibility for future commercial application of such technology, without fiscal year limitation, subject to subsequent annual appropriation.	Title III required publication of a notice soliciting statements of interest in and proposals for projects employing emerging CCTs. A report to Congress was required no later than 4/15/85.
99-88	8/15/85		Deferred $1.6 million for obligation until 10/1/85.	Conference Report (H. Rep. 99-236) concurred with CCT project guidelines contained in Senate Report 99-82, with certain modifications.
99-190	12/19/85	CCT-I	Conference Report (H. Rep. 99-450) agreed to a $400-million CCT Program as described under the U.S. Treasury Department Energy Security Reserve, with the request for proposals to be for the full $400 million.	Required a PON (CCT-I) to be issued and projects to be selected no later than 8/1/86. Project cost-sharing provisions were detailed.
99-591	10/30/86	Second informational solicitation	(Contained no funding provisions for CCT Program)	Title II required publication of a notice soliciting statements of interest in, and informational proposals for projects employing emerging CCTs capable of retrofitting, repowering, or modernizing existing facilities. A report to Congress was required no later than 3/6/87.
100-202	12/22/87	CCT-II	Appropriated $50 million for FY beginning 10/1/87 until expended and $525 million for FY beginning 10/1/88 until expended.	Required a request for proposals (CCT-II) to be issued no later than 60 days following enactment, for emerging CCTs capable of retrofitting or repowering existing facilities. Extended project selection from 120 days to 160 days after receipt of proposals. Provided for cost-sharing of pre-award costs for preparation and submission of environmental data upon signing of the cooperative agreement. Conference Report (H. Rep. 100-498) provided that project cost-sharing funds be made available to nonutility as well as utility applications. No funds were made available for new, stand-alone applications. H. Rep. Report 100-171 and Senate Report 100-165 outlined provisions for participant to repay government contributions.

Exhibit A-1 (continued)
CCT Program Legislative History

Public Law	Date Enacted	CCT Round	Program Funding	Implementation Provisions
100-446	9/27/88	CCT-III	Made available $575 million on 10/1/89 until expended. Pub. L. 100-202 was amended by striking $525 million and inserting $190 million for FY beginning 10/1/88 until expended, $135 million for fiscal year beginning 10/1/89 until expended, and $200 million for FY beginning 10/1/90 until expended, provided that outlays for FY89 resulting from use of funds appropriated under Pub. L. 100-202, as amended, did not exceed $15.5 million.	Request for proposals (CCT-III) to be issued by 5/1/89 for emerging CCTs capable of retrofitting or repowering existing facilities. Proposals were to be due 120 days after issuance of the PON; projects were to be selected no later than 120 days after receipt of proposals. Funds borrowed by REA electric cooperatives from the Federal Financing Bank were made eligible as cost-sharing. Funds derived by the Tennessee Valley Authority from its power program were deemed allowable as cost-sharing except if provided by annual appropriations acts.
101-45	6/30/89	CCT-III	Funds appropriated for FY1989 were made available for a third solicitation.	Project selections for the third solicitation were to be made not later than 1/1/90.
101-121	10/23/89	CCT-IV and CCT-V	Made available $600 million on 10/1/90 until expended and $600 million on 10/1/91 until expended. Pub. L. 100-446 was amended by striking $575 million and inserting $450 million to be made available on 10/1/89 until expended and $125 million to be made available on 10/1/90. Unobligated balances excess to the needs of the procurement for which they originally were made available may be applied to other procurements for which requests for proposals had not yet been issued, except that no supplemental, backup, or contingent selection of projects could be made over and above the projects originally selected.	Two solicitations (CCT-IV and CCT-V) to be issued, one for each appropriation, to demonstrate technologies capable of replacing, retrofitting, or repowering existing facilities, subject to all provisos contained in Pub. L. 99-190, 100-202, and 100-446 as amended. The PON (CCT-IV) using funds becoming available on 10/1/90 was to be issued by 6/1/90, with selections made by 2/1/91. The PON (CCT-V) using funds becoming available on 10/1/91 was to be issued no later than 9/1/91, with selections made by 5/1/92.
101-164	11/21/89	CCT-IV and CCT-V	Appropriation for FY1990 was amended by striking $450 million and inserting $419 million and by striking $125 million and inserting $156 million.	Solicitations could not be conducted prior to ability to obligate funds. Repayment provisions for CCT-IV and CCT-V were to be the same as for CCT-III.
101-302	5/25/90	CCT-IV and CCT-V	Obligation of funds previously appropriated for CCT-IV and CCT-V was deferred until 9/1/91.	

Exhibit A-1 (continued)
CCT Program Legislative History

Public Law	Date Enacted	CCT Round	Program Funding	Implementation Provisions
101-512	11/5/90	CCT-IV and CCT-V	Pub. L. 101-121 was amended by striking $600 million made available on 10/1/90 until expended and $600 million made available on 10/1/91 until expended and inserting $600 million made available as follows: $35 million on 9/1/91, $315 million on 10/1/91, and $250 million on 10/1/92, all sums remaining until expended, for use in conjunction with a separate general request for proposals, and $600 million made available as follows: $150 million on 10/1/91, $225 million on 10/1/92, and $225 million on 10/1/93, all sums remaining until expended, for use with a separate general request for proposals.	The CCT-IV solicitation was to be issued not later than 2/1/91. The CCT-V PON was to be issued not later than 3/1/92. Project selections were to be made within eight months of PON's issuance. Repayment provisions were to be the same as for CCT-III. Provisions were included to provide protections for trade secrets and proprietary information. Conference Report (H. Rep. 101-971) recommends changes to program policy factors.
102-154	11/13/91	CCT-V	Pub. L. 102-512 was amended by striking $150 million on 10/1/91 and $225 million on 10/1/92 and inserting $100 million on 10/1/91 and $275 million on 10/1/92.	The CCT-V PON was delayed to not later than 7/6/92, with selection to be made within 10 months (extended by two months). The PON was to be for projects that advance significantly the efficiency and environmental performance of coal-using technologies and be applicable to either new or existing facilities. Conference Report (H. Rep. 102-256) stated expectations that the CCT-V solicitation would be conducted under the same general types of criteria as CCT-IV, principally modified only to (1) include the wider range of eligible technologies or applications; (2) adjust technical criteria to consider allowable development activities, strengthen criteria for nonutility demonstrations, and adjust commercial performance criteria for additional facilities and technologies with regard to aspects of general energy efficiency and environmental performance; and (3) clarify and strengthen cost and finance criteria, particularly with regard to development activities. Funding was allowed for project-specific development activities for process performance definition, component design verification, materials selection, and evaluation of alternative designs on a cost-shared basis up to a limit of 10 percent of the government share of project cost.

Exhibit A-1 (continued)
CCT Program Legislative History

Public Law	Date Enacted	CCT Round	Program Funding	Implementation Provisions
102-154 (continued)				Development activities eligible for cost-sharing included limited modifications to existing facilities for project-related testing but not construction of new facilities.
102-381	10/5/92		Pub. L. 101-512 was amended by striking $250 million on 10/1/92 and inserting $150 million on 10/1/93 and $100 million on 10/1/94; and by striking $275 million on 10/1/92 and $225 million on 10/1/93 and inserting $250 million on 10/1/93 and $250 million on 10/1/94.	
102-486	10/24/92		(Contained no funding provisions for CCT Program)	Section 1301—Coal RD&D and Commercial Applications Programs (Title XIII; Subtitle A) authorized DOE to conduct programs for RD&D and commercial applications of coal-based technologies. Secretary of Energy was directed to submit to Congress (1) a report that included, among other things, recommendations regarding the manner in which the cost-sharing demonstrations conducted pursuant to the Clean Coal Program (Pub. L. 98-473) might be modified and extended in order to ensure the timely demonstration of advanced coal-based technologies and (2) periodic status reports on the development of advanced coal-based technologies and RD&D and commercial application attributes.
103-138	11/11/93		Pub. L. 101-512 was amended by striking $150 million on 10/1/93 and $100 million on 10/1/94 and inserting $100 million on 10/1/93, $100 million on 10/1/94, and $50 million on 10/1/95; and by striking $250 million on 10/1/93 and $250 million on 10/1/94 and inserting $125 million on 10/1/93, $275 million on 10/1/94, and $100 million on 10/1/95.	
103-332	9/30/94		Pub. L. 101-512 was amended by striking $100 million on 10/1/94 and $50 million on 10/1/95 and inserting $18 million on 10/1/94, $100 million on 10/1/95, and $32 million on 10/1/96; and by striking $275 million on 10/1/94 and $100 million on 10/1/95 and inserting $19.121 million on 10/1/94, $100 million on 10/1/95, and $255.879 million on 10/1/96.	An amount not to exceed $18 million available in FY1995 may be used for administrative oversight of the CCT Program.

Exhibit A-1 (continued)
CCT Program Legislative History

Public Law	Date Enacted	CCT Round	Program Funding	Implementation Provisions
104-6	4/10/95		Of funds available for obligation in FY1996, $50 million was rescinded. Of the funds to be made available for obligation in FY1997, $150 million was rescinded.	
104-134[a]	4/26/96			Conference Report (H. Rep. 104-402 to accompany H.R. 1977) allowed for the use of up to $18 million in CCT Program funds for program administration.
104-208[b]	9/30/96		Conference Report (H. Rep. 104-863 to accompany H.R. 3610) noted rescission of $123 million for FY1997 or prior years.	House and Senate committees did not object to use of up to $16 million in available funds for administration of the CCT Program in FY1997 (H. Rep. 104-625 and Senate 104-319 to accompany H.R. 3662).
105-18	6/12/97		Of funds made available for obligation in FY1997 or prior years, $17 million was rescinded.	
105-83	11/14/97		Of funds made available for obligation in FY1997 or priors, $101 million was rescinded.	
105-277	10/21/98		Of funds made available for obligation in prior years, $40 million was deferred.	Conference Report allowed $14.9 million in CCT Program funds for program administration.
106-113	11/29/99		Of funds made available for obligation in prior years, $156 million was deferred. $38,000 was rescinded as a result of the general reduction.	Conference Report did not object to the use of up to $14.4 million in CCT Program funds for program administration.

[a] H.R. 3019, which became Pub. L. 104-134, replaced H.R. 1977.

[b] H.R. 3610, which became Pub. L. 104-208, replaced H.R. 3662.

Public Law 99-190

Public Law 99-190, 99 Stat. 1251 (1985)

Clean Coal Technology

Within 60 days following enactment of this Act [Dec. 19, 1985] the Secretary of Energy shall, pursuant to the Federal Nonnuclear Energy Research and Development Act of 1974 *(42 U.S.C. 5901,* et seq.), issue a general request for proposals for clean coal technology projects for which the Secretary of Energy upon review may provide financial assistance awards. Proposals for clean coal technology projects under this section shall be submitted to the Department of Energy within 60 days after issuance of the general request for proposals. The Secretary of Energy shall make any project selections no later than August 1, 1986: Provided, That the Secretary may vest fee title or other property interests acquired under cost-shared clean coal technology agreements in any entity, including the United States: Provided further, That the Secretary shall not finance more than 50 per centum of the total costs of a project as estimated by the Secretary as of the date of award of financial assistance: Provided further, That cost-sharing by project sponsors is required in each of the design, construction, and operating phases proposed to be included in a project: Provided further, That financial assistance for costs in excess of those estimated as of the date of award of original financial assistance may not be provided in excess of the proportion of costs borne by the Government in the original agreement and only up to 25 per centum of the original financial assistance: Provided further, That revenues or royalties from prospective operation of projects beyond the time considered in the award of financial assistance, or proceeds from prospective sale of the assets of the project, or revenues or royalties from replication of technology in future projects or plants are not cost-sharing for the purposes of this appropriation: Provided further, That other appropriated Federal funds are not cost-sharing for the purposes of this appropriation: Provided further, That existing facilities, equipment, and supplies, or previously expended research or development funds are not cost-sharing for the purposes of this appropriation, except as amortized, depreciated, or expensed in normal business practice.

Conference Report (H.R. Conf. Rep. No. 450, 99th Cong., 1st Sess. [1985])

Clean Coal Technology

The managers have agreed to a $400,000,000 Clean Coal Technology program as described under the Department of the Treasury, Energy Security Reserve. Bill language is included which provides for the selection of projects no later than August 1, 1986. Within that period, a general request for proposals must be issued within 60 days and proposals must be submitted to the Department within 60 days after issuance of the general request for proposals. Language is also included allowing the Secretary of Energy to vest title in interests acquired under agreements in any entity, including the United States, and delineating cost-sharing requirements. Funds for these activities and projects are made available to the Clean Coal Technology program in the Energy Security program.

It is the intent of the managers that contributions in the form of facilities and equipment be considered only to the extent that they would be amortized, depreciated or expensed in normal business practice. Normal business practice shall be determined by the Secretary and is not necessarily the practice of any single proposer. Property which has been fully depreciated would not receive nay cost-sharing value except to the extent that it has been in continuous use by the proposer during the calendar year immediately preceding the enactment of this Act. For this property, a fair use value for the life of the project may be assigned. Property offered as a cost-share by the proposer that is currently being depreciated would be limited in its cost-share value to the depreciation claimed during the life of the demonstration project. Furthermore, in determining normal business practice, the Secretary should not accept valuation for property sold, transferred, exchanged, or otherwise manipulated to acquire a new basis for depreciation purposes or to establish a rental value in circumstances which would amount to a transaction for the mere purpose of participating in this program.

The managers agree that, with respect to cost-sharing, tax implications of proposals and tax advantages available to individual proposers should not be considered in determining the percentage of Federal cost-sharing. This is consistent with current and historical practices in Department of Energy procurements.

It is the intent of the managers that there be full and open competition and that the solicitation be open to all markets utilizing the entire coal resource base. However, projects should be limited to the use of United States mined coal as the feedstock and demonstration sites should be located within the United States.

The managers agree that no more than $1,500,000 shall be available in FY1986 and $2,000,000 each year thereafter for contracting, travel and ancillary costs of the program, and that manpower costs are to be funded under the fossil energy research and development program.

The managers direct the Department, after projects are selected, to provide a comprehensive report to the Congress on proposals received.

The managers also expect the request for proposals to be or the full $400,000,000 program, and not only for the first $100,000,000 available in fiscal year 1986.

Public Law 100-202

Public Law 100-202, 101 Stat. 1329-1 (1987)

Clean Coal Technology

For necessary expenses of, and associated with, Clean Coal Technology demonstrations pursuant to 42 U.S.C. 5901 et seq., $50,000,000 are appropriated for the fiscal year beginning October 1, 1987, and shall remain available until expended, and $525,000,000 are appropriated for the fiscal year beginning October 1, 1988, and shall remain available until expended.

No later than sixty days following enactment of this Act, the Secretary of Energy shall, pursuant to the Federal Nonnuclear Energy Research and Development Act of 1974 (42 U.S.C. 5901 et seq.), issue a general request for proposals for emerging clean coal technologies which are capable of retrofitting or repowering existing facilities, for which the Secretary of Energy upon review may provide financial assistance awards. Proposals under this section shall be submitted to the Department of Energy no later than ninety days after issuance of the general request for proposals required herein, and the Secretary of Energy shall make any project selections no later than one hundred and sixty days after receipt of proposal: *Provided*, That projects selected are subject to all provisos contained under this head in Public Law 99-190: *Provided further*, That pre-award costs incurred by project sponsors after selection and before signing an agreement are allowable to the extent that they are related to (1) the preparation of material requested by the Department of Energy and identified as required for the negotiation; or (2) the preparation and submission of environmental data requested by the Department of Energy to complete National Environmental Policy Act requirements for the projects: *Provided further*, That pre-award costs are to be reimbursed only upon signing of the project agreement and only in the same ratio as the cost-sharing for the total project: *Provided further*, That reports on projects selected by the Secretary of Energy pursuant to authority granted under the heading "Clean coal technology" in the Department of the Interior and Related Agencies Appropriations Act, 1986, as contained in Public Law 99-190, which are received by the Speaker of the House of Representatives and the President of the Senate prior to the end of the first session of the 100th Congress shall be deemed to have met the criteria in the third proviso of the fourth paragraph under the heading "Administrative provision, Department of Energy" in the Department of the Interior and Related Agencies Appropriations Act, 1986, as contained in Public Law 99-190, upon expiration of 30 calendar days from receipt of the report by the Speaker of the House of Representatives and the President of the Senate.

Conference Report (H.R. Conf. Rep. No. 498, 100th Cong., 1st Sess. [1987])

Clean Coal Technology

Appropriates $575,000,000 for clean coal technology instead of $350,000,000 as proposed by the House and $850,000,000 as proposed by the Senate. The comparison by year is as follows:

	House	Senate	Conference
Fiscal year:			
1988	$50,000,000	$350,000,000	$50,000,000
1989	200,000,000	500,000,000	525,000,000
1990	100,000,000	———	———
Total	**350,000,000**	**850,000,000**	**575,000,000**

Bill language, proposed by the House, which would have prohibited using grants has been deleted. The managers agree that project funding is expected to be based on cooperative agreements, but that grants might be applicable to support work also funded from this account.

The managers agree to deleted Senate language providing personnel floors for Clean Coal Technology. The managers further agree that the budget estimates for personnel and contract support are to be followed. The agreement included 58 new positions above current employment floors for the fossil energy organization and 30 positions within the floors. Out of clean coal technology funds, up to $3,980,000 is for fiscal year 1988 personnel-related costs and up to $16,520,000 is for all contract costs needed to make project selections and complete negotiations for both clean coal procurements. Contract costs necessary to monitor approved projects should be requested in the fiscal year 1989 budget. Increases above to those amount are subject to reprogramming procedures. No funds other than personnel related costs for the 30 positions included in the program direction are to be provided from the fossil energy research and development account.

The length of time for selection of projects by the Secretary of Energy has been extended from 120 days to 160 days based on experience from the original clean coal procurement. Once projects have been selected the Secretary should establish project milestones and guidelines for project negotiations in order to expedite the negotiation process to the extent feasible.

The managers agree that the funds provided are available for non-utility applications as well as for utility applications.

The managers agree that no funds are provided for the demonstration of clean coal technologies which are intended solely for new, stand alone, applications. The Senate had proposed up to 25% of the funds be available for this purpose.

Bill language has been included which provides that reports on projects selected in the first round of clean coal procurements that are received before the end of the first session of the 100th Congress will satisfy reporting requirements 30 calendar days after receipt by Congress. This provision applies to a maximum of two project reports.

Public Law 100-446

Public Law 100-446, 102 Stat. 1774 (1988)

CLEAN COAL TECHNOLOGY

For necessary expenses of, and associated with, Clean Coal Technology demonstrations pursuant to 42 U.S.C. 5901 et seq., $575,000,000 shall be made available on October 1, 1989, and shall remain available until expended: *Provided*, That projects selected pursuant to a general request for proposals issued pursuant to this appropriation shall demonstrate technologies capable of retrofitting or repowering existing facilities and shall be subject to all provisions contained under this head in Public Laws 99-190 and 100-202 as amended by this Act.

The first paragraph under this head in Public Law 100-202 is amended by striking "and $525,000,000 are appropriated for the fiscal year beginning October 1, 1988" and inserting "$190,000,000 are appropriated for the fiscal year beginning October 1, 1988, and shall remain available until expended, $135,000,000 are appropriated for the fiscal year beginning October 1, 1989, and shall remain available until expended, and $200,000,000 are appropriated for the fiscal year beginning October 1, 1990": *Provided*, That outlays in fiscal year 1989 resulting from the use of funds appropriated under this head in Public Law 100-202, as amended by this Act, may not exceed $15,500,000: *Provided further*, That these actions are taken pursuant to section 202(b)(1) of Public law 100-119 (2 U.S.C. 909).

For the purposes of the sixth proviso under this head in Public Laws 99-190, funds derived by the Tennessee Valley Authority from its power program are hereafter not to be precluded from qualifying as all or part of any cost-sharing requirement, except to the extent that such funds are provided by annual appropriations Acts: *Provided*, That unexpended balances of funds made available in the "Energy Security Reserve" account in the Treasury for the Clean Coal Technology Program by the Department of the Interior and Related Agencies Appropriations Acts, 1986, as contained in section 101(d) of Public Law 99-190, shall be merged with this account: *Provided further*, That for the purposes of the sixth proviso in Public Law 99-190 under this heading, funds provided under section 306 of Public Law 93-32 shall be considered non-Federal: *Provided further*, That reports on projects selected by the Secretary of Energy pursuant to authority granted under the heading

"Clean coal technology" in the Department of the Interior and Related Agencies Appropriations Act, 1986, as contained in Public Law 99-190, which are received by the Speaker of the House of Representatives and the President of the Senate prior to the end of the second session of the 100th Congress shall be deemed to have met the criteria in the third proviso of the fourth paragraph under the heading "Administrative provisions, Department Energy" in the Department of the Interior and Related Agencies Appropriations Act, 1986, as contained in Public Law 99-190, upon expiration of 30 calendar days from receipt of the report by the Speaker of the House of Representatives and the President of the Senate.

Conference Report (H.R. Conf. Rep. No. 862, 100th Cong., 2nd Sess. [1988])

Clean Coal Technology

Amendment No. 131: Reported in technical disagreement. The managers on the part of the House will offer a motion to recede and concur in the amendment of the Senate with an amendment as follows:

In lieu of the matter proposed by said amendment insert the following: *For necessary expenses of, and associated with, Clean Coal Technology demonstrations pursuant to 42 U.S.C. 5901 et seq., $575,000,000 shall be made available on October 1, 1989, and shall remain available until expended: Provided, That projects selected pursuant to a general request for proposals issued pursuant to this appropriation shall demonstrate technologies capable of retrofitting or repowering existing facilities and shall be subject to all provisos contained under this head in Public Laws 99-190 and 100-202 as amended by this Act.*

The managers on the part of the Senate will move to concur in the amendment of the House to the amendment of the Senate. The amendment provides $575,000,000 in fiscal year 1990 for a third Clean Coal Technology procurement as proposed by the Senate, and clarifies that the procurement is for retrofit and repowering technologies and is subject to the cost-sharing provisions of the previous two procurements.

The managers agree that a request for proposals should be issued by May 1, 1989, with proposals due no later than 120 days after issuance of the request for proposals, and that the Secretary of Energy should make project selections no later than 120 days after receipt of proposals.

Amendment No. 132: Reported in technical disagreement. The managers on the part of the House will offer a motion to recede and concur in the amendment of the Senate with an amendment as follows:

Restore the matter stricken by said amendment, amended to read as follows: *The first paragraph under this head in Public Law 100-202 is amended by striking "and $525,000,000 are appropriated for the fiscal year beginning October 1, 1988" and inserting "$190,000,000 are appropriated for the fiscal year beginning October 1, 1988, and shall remain available until expended, $135,000,000 are appropriated for the fiscal year beginning October 1, 1989, and shall remain available until expended, and $200,000,000 are appropriated for the fiscal year beginning October 1, 1990": Provided, That outlays in fiscal year 1989 resulting from the use of funds appropriated under this head in Public Law 100-202, as amended by this Act, may not exceed $15,500,000: Provided further, That these actions are taken pursuant to section 202(b)(1) of Public Law 100-119 (2 U.S.C. 909).*

The managers on the part of the Senate will move to concur in the amendment of the House to the amendment of the Senate. The amendment changes the availability of $525,000,000 originally made available for fiscal year 1989 in Public Law 100-202 by making $190,000,000 available in 1989, $135,000,000 available in 1990, and $200,000,000 available in 1991 and also provides an outlay ceiling in fiscal year 1989. The House had proposed $100,000,000 in fiscal year 1989, $225,000,000 in fiscal year 1990, and $200,000,000 in fiscal year 1989, $225,000,000 in fiscal year 1990, and $200,000,000 in fiscal year 1991, and the Senate struck the House language.

Both of these changes are necessary because of budget allocation constraints, but neither action has an effect on the execution of the Clean Coal program, or on the Congress' overall support for the program, as is evidenced by additional appropriations provided for a third procurement of technologies.

The managers agree that administrative contract expenses may be incurred up to the budget level of $9,820,000, but caution that close control of such expenditures is necessary to assure that the outlay ceiling provided will be sufficient to cover project costs.

Amendment No. 133: Modifies public law citation as proposed by the Senate.

Amendment No. 134: Reported in technical disagreement. The managers on the part of the House will offer a motion to recede and concur in the amendment of the Senate which clarifies that funds borrowed by REA Electric Cooperatives from the Federal Financing Bank are eligible as cost-sharing in the clean coal technology program.

Amendment No. 135: Reported in technical disagreement. The managers on the part of the House will offer a motion to recede and concur in the amendment of the Senate which specifies clean coal projects may proceed 30 calendar days after receipt by Congress of required reports, provided the reports are received prior to the end of the 100th Congress.

Public Law 101-45

Public Law 101-45, 103 Stat. 97 (1989)

Clean Coal Technology

Notwithstanding any other provision of law, funds originally appropriated under this head in the Department of the Interior and Related Agencies Appropriations Act, 1989, shall be available for a third solicitation of clean coal technology demonstration projects, which projects are to be selected by the Department not later than January 1, 1990.

Public Law 101-121

Public Law 101-121, 103 Stat. 701 (1989)

Clean Coal Technology

For necessary expenses of, and associated with, Clean Coal Technology demonstrations pursuant to 42 U.S.C. 5901 et seq., $600,000,000 shall be made available on October 1, 1990, and shall remain available until expended, and $600,000,000 shall be made available on October 1, 1991, and shall remain available until expended: Provided, That projects selected pursuant to a separate general request for proposals issued pursuant to each of these appropriations shall demonstrate technologies capable of replacing, retrofitting or repowering existing facilities and shall be subject to all provisos contained under this head in Public Laws 99-190, 100-202, and 100-446 as amended by this Act: Provided further, That the general request for proposals using funds becoming available on October 1, 1990, under this paragraph shall be issued no later than June 1, 1990, and projects resulting from such a solicitation must be selected no later than February 1, 1991: Provided further, That the general request for proposals using funds becoming available on October 1, 1991, under this paragraph shall be issued no later than September 1, 1991, and projects resulting from such a solicitation must be selected no later than May 1, 1992.

The first paragraph under this head in Public Law 100-446 is amended by striking "$575,000,000 shall be made available on October 1, 1989" and inserting "$450,000,000 shall be made available on October 1, 1989, and shall remain available until expended, and $125,000,000 shall be made available on October 1, 1990": Provided, That these actions are taken pursuant to section 202(b)(1) of Public Law 100-119 (2 U.S.C. 909).

With regard to funds made available under this head in this and previous appropriations Acts, unobligated balances excess to the needs of the procurement for which they originally were made available may be applied to other procurements for which requests for proposals have not yet been issued: Provided, That for all procurements for which project selections have not been made as of the date of enactment of this Act no supplemental, backup, or contingent selection of projects shall be made over and above projects originally selected for negotiation and utilization of available funds: Provided further, That reports on projects selected by the Secretary of Energy pursuant to authority granted under this heading which are received by the Speaker of the House of Representatives and the President of the Senate less than 30 legislative days prior to the end of the first session of the 101st Congress shall be deemed to have met the criteria in the third proviso of the fourth paragraph under the heading "Administrative provisions, Department of Energy" in the Department of the Interior and Related Agencies Appropriations Act, 1986, as contained in Public Law 99-190, upon expiration of 30 calendar days from receipt of the report by the Speaker of the House of Representatives and the President of the Senate or at the end of the session, whichever occurs later.

Conference Report (H.R. Conf. Rep. No. 264, 101st Cong., 1st Sess. [1987])

CLEAN COAL TECHNOLOGY

Amendment No. 112: Reported in technical disagreement. The managers on the part of the House will offer a motion to recede and concur in the amendment of he Senate which adds the word "replacing" to the definition of clean coal technology. The managers agree that the inclusion of "replacing" for clean coal IV and V is intended to cover the complete replacement of an existing facility if because of design or site specific limitations, repowering or retrofitting of the plant is not a desirable option.

Amendment No,. 113: Appropriates $450,000,000 for fiscal year 1990 for clean coal technology instead of $500,000,000 as proposed by the House and $325,000,000 as proposed by he Senate. This appropriation along with $125,000,000 provided for fiscal year 1991 in Amendment 114 fully funds the third round of clean coal technology projects. The managers agree that additional manpower is required, particularly at the Department's Energy Technology Centers, in order to manage adequately the increased workload from the accumulation of active clean coal technology projects and the inclusion of additional procurements in this bill. Although a legislative floor is not included, the managers agree that at least eighty personnel will be required in addition to the approximately thirty FTE's now included in the fossil energy research and development appropriation. The managers agree further that funds from the fossil energy research and development appropriation should not be used to pay the cost of more than the equivalent FTE's paid under that account in fiscal year 1989.

Amendment No. 114: Reported in technical disagreement. The managers on the part of the House will offer a motion to recede and concur in the amendment of the Senate with an amendment as follows:

In lieu of the matter stricken and inserted by said amendment, insert: *and shall remain available until expended, and $125,0000,000*

The managers on the part of the Senate will move to concur in the amendment of the House to the amendment of the Senate. The amendment provides $125,000,000 in fiscal year 1991 for the third clean coal technology procurement instead of $75,000,000 as proposed by the House and $100,000,000 as proposed by the Senate.

Amendment No 115: Deletes Senate proposed appropriation of $150,000,000 for fiscal year 1992 for clean coal technology. The House proposed no such appropriation.

Amendment No. 116: Restores House language stricken by the Senate which prohibits the use of supplemental, backup, or contingent project selections in clean coal technology procurements.

Amendment No. 117: Restores the word "further" stricken by the Senate.

Public Law 101-164

Public Law 101-164, 103 Stat. 1069 (1989)

CLEAN COAL TECHNOLOGY

The second paragraph under this head contained in the Act making appropriations for the Department of the Interior and Related Agencies for the fiscal year ending September 30, 1990, is amended by striking "$450,000,000" and inserting "$419,000,000" and by striking "$125,000,000" and inserting "$156,000,000".

Conference Report (H.R. Conf. Rep. No. 315, 101st Cong., 1st Sess. [1989])

The managers have agreed to reduce the funds appropriated by the Energy and Water Development Appropriations Act for Fiscal Year 1990 (Public Law 101-101) for the "Nuclear Waste Disposal Fund" by $46,000,000. This reduction will make funds available for the drug prevention effort.

The managers have agreed to reductions to the Interior and Related Agencies Appropriations Act for Fiscal Year 1990 (Public Law 101-121) in order to accommodate additional drug related appropriations.

The reductions are in three areas. The new budget authority for Clean Coal Technology of $450,000,000 for fiscal year 1990 is reduced by $31,000,000 with this same amount added to the advance appropriation for fiscal year 1991. With this change the new amount for fiscal year 1990 is $419,000,000 while fiscal year 1991 increases to $156,000,000. The second area of change is the imposition of an outlay ceiling on Strategic Petroleum Reserve oil acquisition. Outlays will be reduced from

an estimated $169,945,000 to $147,125,000 and will decrease the fill rate from approximately 50,000 barrels per day to approximately 46,000 or 47,000 barrels per day. The third reduction relates to the Pennsylvania Avenue Development Corporation. The borrowing authority is reduced from $5,000,000 to $100,000.

The conference agreement includes bill language reducing the amount of funds transferred from trust funds to the Health Care Financing Administration Program Management account by $32,000,000 from $1,917,172,000 to $18,851,712,000. This reduction, along with the outlays reserved from the regular 1990 Labor, Health and Human Services, and Education appropriations bill, will be sufficient to support the Subcommittee's share of the cost of anti-drug abuse funding. The conferees intend that the reduction in trust fund transfers be associated with activities to implement catastrophic health insurance, where funding needs may be diminished.

Public Law 101-302

Public Law 101-302, 104 Stat. 213 (1990)

Clean Coal Technology

Funds previously appropriated under this head for clean coal technology solicitations to be issued no later than June 1, 1990, and no later than September 1, 1991, respectively, shall not be obligated until September 1, 1991: Provided, That the aforementioned solicitations shall not be conducted prior to the ability to obligate these funds: Provided further, That pursuant to section 202(b) of the Balanced Budget and Emergency Deficit Control Reaffirmation Act of 1987, this action is a necessary (but secondary) result of a significant policy change: Provided further, That for the clean coal solicitations identified herein, provisions included for the repayment of government contributions to individual projects shall be identical to those included in the Program Opportunity Notice (PON) for Clean Coal Technology III (CCT-III) Demonstration Projects (solicitation number DE-PSO1-89 FE 61825), issued by the Department of Energy on May 1, 1989.

Conference Report (H.R. Conf. Rep. No. 493, 101st Cong., 2nd Sess. [1990])

Clean Coal Technology

Amendment No. 89. Reported in technical disagreement. The managers on the part of the House will offer a motion to recede and concur in the amendment of the senate with an amendment as follows:

In lieu of the matter proposed by said amendment insert:

Department of Energy
Clean Coal Technology

Funds previously appropriated under this head for clean coal technology solicitations to be issued no later than June 1, 1990, and no later than September 1, 1991, respectively, shall not be obligated until September 1, 1991: Provided, That the aforementioned solicitations shall not be conducted prior to the ability to obligate these funds: Provided further, That pursuant to section 202 (b) of the Balanced Budget and Emergency Deficit Control reaffirmation /Act of 1987 this action is a necessary (but secondary) result of a significant policy change: Provided further, That for the clean coal solicitations identified herein, provisions included for the repayment of government contributions to individual projects shall be identical to those included in the Program Opportunity Notice (PON) for Clean Coal Technology III (CCT-III) Demonstration Projects (solicitation number DE-PS01-89 FE 61825), issued by the Department of Energy on May 1, 1989.

The managers on the part of the Senate will move to concur in the amendment of the House to the amendment of the Senate.

The amendment delays the fourth and fifth clean coal technology solicitations as proposed by the Senate and specifies that, when issued, these solicitations must use repayment provisions used successfully in the third solicitation. This provision was included in the House introduced bill (H.R. 4828) and modifies a Senate amendment to the original Dire Emergency Supplemental.

The managers agree that changes to the clean air bill, proposed by a House authorizing committee, that would modify the clean coal technology program must be resolved before a reasonable solicitation can be issued. The proposed delay will allow such resolution.

The managers have added language to ensure that provisions dealing with the repayment of government provided funds will remain the same as the third round of procurements. These provisions were developed over a four year period based on experience of previous procurements and negotiations, and input from industrial participants, Congress, and the managers of the program. They appear to be working well.

Based on the long-term experience, and the clear fact that implementation of this type of technology will become even more important with passage of clean air legislation, the managers reject proposals put forth by the Department of Energy to increase rates substantially. Such proposals, while they might increase the recovery of government-provided funds over periods of up to 20 years, might also act as a deterrent to industrial participation in the program, which is already over 50 percent cost-shared by industry. The purpose of the program is to accelerate the introduction of clean uses of coal in a more efficient manner in compliance with stringent new air quality standards, not the provision of investment returns to the Government at the expense of nascent markets.

Public Law 101-512

Public Law 101-512, 104 Stat. 1915 (1990)

Clean Coal Technology

The first paragraph under this head in Public Law 101-121 is amended by striking "$600,000,000 shall be made available on October 1, 1990, and shall remain available until expended, and $600,000,000 shall be made available on October 1, 1991, and shall remain available until expended" and inserting "$600,000,000 shall be made available as follows: $35,000,000 on September 1, 1991, $315,000,000 on October 1, 1991, and $250,000,000 on October 1, 1992, all such sums to remain available until expended for use in conjunction with a separate general request for proposals, and $600,000,000 shall be made available as follows: $150,000,000 on October 1, 1991, $225,000,000 on October 1, 1992, and $225,000,000 on October 1, 1993, all such sums to remain available until expended for use in conjunction with a separate general request for proposals": Provided, That these actions are taken pursuant to section 202(b)(1) of Public Law 100-119 *(2 U.S.C. 909):* Provided further, That a fourth general request for proposals shall be issued not later than February 1, 1991, and a fifth general request for proposals shall be issued not later than March 1, 1992: Provided further, That project proposals resulting from such solicitations shall be selected not later than eight months after the date of the general request for proposals: Provided further, That for clean coal solicitations required herein, provisions included for the repayment of government contributions to individual projects shall be identical to those included in the Program Opportunity Notice (PON) for Clean Coal Technology III (CCT-III) Demonstration Projects (solicitation number DE-PS01-89 FE 61825), issued by the Department of Energy on May 1, 1989: Provided further, That funds provided under this head in this or any other appropriations Act shall be expended only in accordance with the provisions governing the use of such funds contained under this head in this or any other appropriations Act.

With regard to funds made available under this head in this and previous appropriations Acts, unobligated balances excess to the needs of the procurement for which they originally were made available may be applied to other procurements for use on projects for which cooperative agreements are in place, within the limitations and proportions of Government financing increases currently allowed by law: Provided, That the Department of Energy, for a period of up to five (5) years after completion of the operations phase of a cooperative agreement may provide appropriate protections, including exemptions from subchapter II of chapter 5 of title 5, United States Code, against the dissemination of information that results from demonstration activities conducted under the Clean Coal Technology Program and that would be a trade secret or commercial or financial information that is privileged or confidential if the information had been obtained from and first produced by a non-Federal party participating in a Clean Coal Technology project: Provided further, That, in addition to the full-time permanent Federal employees specified in section 303 of Public Law 97-257, as amended, no less than 90 full-time Federal employees shall be assigned to the Assistant Secretary for Fossil Energy for carrying out the programs under this head using funds available under this head in this and any other appropriations Act and of which 35 shall be for PETC and 30 shall be for METC: Provided further, That reports on projects selected by the Secretary of Energy pursuant to authority granted under this heading which are received by the Speaker of the House of Representatives and the President of the Senate less than 30 legislative days prior to the end of the second session of the 101st Congress shall be deemed to

have met the criteria in the third proviso of the fourth paragraph under the heading "Administrative provisions, Department of Energy" in the Department of the Interior and Related Agencies Appropriations Act, 1986, as contained in Public Law 99-190, upon expiration of 30 calendar days from receipt of the report by the Speaker of the House of Representatives and the President of the Senate or at the end of the session, whichever occurs later.

Conference Report (H.R. Conf. Rep. No. 971, 101st Cong., 2nd Sess. [1990])

Clean Coal Technology

Amendment No. 142: Provides $35,000,000 for clean coal technology on September 1, 1991 as proposed by the House instead of $100,000,000 as proposed by the Senate. This amendment and Amendment No. 143 shift the availability of $65,000,000 from fiscal year 1991 to fiscal year 1992.

Amendment No. 143: Provides $315,000,000 for clean coal technology on October 1, 1991 as proposed by the House instead of $250,000,000 as proposed by the Senate. This amendment and Amendment No. 142 shift the availability of $65,000,000 from fiscal year 1991 to fiscal year 1992.

Amendment No. 144: Provides dates for two solicitations for clean coal technology as proposed by the Senate. The date for CCT-IV is amended to February 1, 1991 from January 1, 1991. The date for CCT-V is not changed from the Senate date of March 1, 1992.

The managers have agreed to a February 1, 1991 date for the next solicitation to enable the Department to publish a draft solicitation for comment by interested parties. It is expected that there will be changes to evaluation criteria and other factors that make it imperative that potential proposers have an opportunity to comment on the content of the solicitation.

The managers urge the Department to include potential benefits to remote, import-dependent sites as a program policy factor in evaluating proposals. The Department should also consider projects which can provide multiple fuel resource options for regions which are more than seventy-five percent dependent on one fuel form for total energy requirements.

Amendment No. 145: Requires selection of projects within eight months of the requests for proposals required by Amendment No. 144 as proposed by the Senate. The House had no such provision.

Amendment No. 146: Requires repayment of government contributions to projects under conditions identical to the most recent clean coal solicitation as proposed by the Senate. The House had no such provision.

Amendment No. 147: Provides that funds for clean coal technology may be expended only under conditions contained in appropriations Acts. The Senate language had prohibited geographic restrictions on the expenditure of funds. The House had no such provision. The managers direct that no preferential consideration be given to any project referenced explicitly or implicitly in other legislation.

The managers agree to delete bill language dealing with geographic restrictions based on such restrictions being deleted from clean air legislation.

Amendment No. 148: Earmarks employees to two fossil energy technology centers as proposed by the Senate. The House had no such provision. The managers agree that the earmarks for PETC and METC are minimum levels and may be increased as necessary.

The managers agree that no more than the current 30 full-time equivalent positions from fossil energy research and development may be used in the clean coal program in fiscal year 1991.

Public Law 102-154

Public Law 102-154, 105 Stat. 990 (1991)

Clean Coal Technology

The first paragraph under this head in Public Law 101-512 is amended by striking the phrase "$150,000,000 on October 1, 1991, $225,000,000 on October 1, 1992" and inserting "$100,000,000 on October 1, 1991, $275,000,000 on October 1, 1992".

Notwithstanding the issuance date for the fifth general request for proposals under this head in Public Law 101-512, such request for proposals shall be issued not later than July 6, 1992, and notwithstanding the proviso under this head in Public Law 101-512 regarding the time interval for selection of proposals resulting from such solicitation, project proposals resulting from the fifth general request for proposals shall be selected not later than ten months after the issuance date of the fifth

general request for proposals: Provided, That hereafter the fifth general request for proposals shall be subject to all provisos contained under this head in previous appropriations Acts unless amended by this Act.

Notwithstanding the provisos under this head in previous appropriations Acts, projects selected pursuant to the fifth general request for proposals shall advance significantly the efficiency and environmental performance of coal-using technologies and be applicable to either new or existing facilities: Provided, That budget periods may be used in lieu of design, construction, and operating phases for cost-sharing calculations: Provided further, That the Secretary shall not finance more than 50 per centum of the total costs of any budget period: Provided further, That project specific development activities for process performance definition, component design verification, materials selection, and evaluation of alternative designs may be funded on a cost-shared basis up to a limit of 10 per centum of the Government's share of project cost: Provided further, That development activities eligible for cost-sharing may include limited modifications to existing facilities for project related testing but do not include construction of new facilities.

With regard to funds made available under this head in this and previous appropriations Acts, unobligated balances excess to the needs of the procurement for which they originally were made available may be applied to other procurements for use on projects for which cooperative agreements are in place, within the limitations and proportions of Government financing increases currently allowed by law: Provided, That hereafter, the Department of Energy, for a period of up to five years after completion of the operations phase of a cooperative agreement may provide appropriate protections, including exemptions from subchapter II of chapter 5 of title 5, United States Code, against the dissemination of information that results from demonstration activities conducted under the Clean Coal Technology Program and that would be a trade secret or commercial or financial information that is privileged or confidential if the information had been obtained from and first produced by a non-Federal party participating in a Clean Coal Technology project: Provided further, That hereafter, in addition to the full-time permanent Federal employees specified in section 303 of Public Law 97-257, as amended, no less than 90 full-time Federal employees shall be assigned to the Assistant Secretary for Fossil Energy for carrying out the programs under this head using funds available under this head in this and any other appropriations Act and of which not less than 35 shall be for PETC and not less than 30 shall be for METC: Provided further, That hereafter reports on projects selected by the Secretary of Energy pursuant to authority granted under this heading which are received by the Speaker of the House of Representatives and the President of the Senate less than 30 legislative days prior to the end of each session of Congress shall be deemed to have met the criteria in the third proviso of the fourth paragraph under the heading "Administrative provisions, Department of Energy" in the Department of the Interior and Related Agencies Appropriations Act, 1986, as contained in Public Law 99-190, upon expiration of 30 calendar days from receipt of the report by the Speaker of the House of Representatives and the President of the Senate or at the end of the session, whichever occurs later.

Conference Report (H.R. Conf. Rep. No. 256, 102nd Cong., 1st Sess. [1991])

CLEAN COAL TECHNOLOGY

Amendment No. 165: Reported in technical disagreement. The managers on the part of the House will offer a motion to recede and concur in the amendment of the Senate with an amendment as follows:

In lieu of the matter stricken and inserted by said amendment insert:

Notwithstanding the issuance date for the fifth general request for proposals under this head in Public Law 101-512, such request for proposals shall be issued not later than July 6, 1992, and notwithstanding the proviso under this head in Public Law 101-512 regarding the time interval for selection of proposals resulting from such solicitation, project proposals resulting from the fifth general request for proposals shall be selected not later than ten months after the issuance date of the fifth general request for proposals: Provided, That hereafter the fifth general request for proposals

The managers on the part of the Senate will move to concur in the amendment of the House to the amendment of the Senate.

The amendment changes the issuance date for the fifth general request for proposals to July 6, 1992 instead of March 1, 1992 as proposed by the House and August 10, 1992 as proposed by the Senate and the allowable length of time from issuance of the request for proposals to selection of projects to ten months. The amendment also deletes Senate proposed bill language pertaining to a sixth general request for proposals as discussed below.

The managers agree that the additional two months in the procurement process for the fifth round of proposals should include an additional month to allow for the preparation of proposals by the private sector, and up to an additional month for

Department of Energy review and evaluation of proposals when compared to the process for the fourth round.

The managers have agreed to delete bill language regarding a sixth round of proposals, but agree that funding will be provided for a sixth round based on unobligated and unneeded amounts that may become available from the first five rounds. The report from the Secretary on available funds, which was originally in the Senate amendment, is still a requirement and such report should be submitted to the House and Senate Committees on Appropriations not later than May 1, 1994. Based on that report, the funding, dates and conditions for the sixth round will be included in the fiscal year 1995 appropriation.

The managers expect that the fifth solicitation will be conducted under the same general types of criteria as the fourth solicitation principally modified only (1) to include the wider range of eligible technologies or applications; (2) to adjust technical criteria to consider allowable development activities, to strengthen criteria for non-utility demonstrations, and to adjust commercial performance criteria for additional facilities and technologies with regard to aspects of general energy efficiency and environmental performance; and (3) to clarify and strengthen cost and finance criteria particularly with regard to development activities.

Amendment No. 166: Restores House language deleted by the Senate which refers to a fifth general request for proposals. The Senate proposed language dealing with both a fifth and a sixth round.

Amendment No. 167: Reported in technical disagreement. The managers on the part of the House will offer a motion to recede and concur in the amendment of the Senate which directs the Secretary of Energy to reobligate up to $44,000,000 from the fourth round of Clean Coal Technology proposals to a proposal ranked highest in its specific technology category by the Source Evaluation Board if other than the highest ranking project in that category was selected originally by the Secretary, and if such funds become unobligated and are sufficient to fund such projects. This amendment would earmark such funds, if they become available, to a specific project not chosen in the Department of Energy selection process for the fourth round of Clean Coal Technology.

Amendment No. 168: Technical amendment which deletes House proposed punctuation and numbering as proposed by the Senate.

Amendment No. 169: Deletes House proposed language which made unobligated funds available for procurements for which requests for proposals have not been issued.

Amendment No. 170: Reported in technical disagreement. The managers on the part of the House will offer a motion to recede and concur in the amendment of the Senate which adds "not less than" to employment floor language for PETC as proposed by the Senate. The House had no such language.

Amendment No. 171: Reported in technical disagreement. The managers on the part of the House will offer a motion to recede and concur in the amendment of the Senate which adds "not less than" to employment floor language for METC as proposed by the Senate. The House had no such language.

Public Law 102-381

Public Law 102-381, 106 Stat. 1374 (1992)

Clean Coal Technology

The first paragraph under this head in Public Law 101-512, as amended, is further amended by striking the phrase "and $250,000,000 on October 1, 1992" and inserting "$150,000,000 on October 1, 1993, and $100,000,000 on October 1, 1994" and by striking the phrase "$275,000,000 on October 1, 1992, and $225,000,000 on October 1, 1993" and inserting "$250,000,000 on October 1, 1993, and $250,000,000 on October 1, 1994".

Public Law 103-138

Public Law 103-138, 107 Stat. 1379 (1993)

CLEAN COAL TECHNOLOGY

The first paragraph under this head in Public Law 101-512, as amended, is further amended by striking the phrase "$150,000,000 on October 1, 1993, and $100,000,000 on October 1, 1994" and inserting "$100,000,000 on October 1, 1993, $100,000,000 on October 1, 1994, and $50,000,000 on October 1, 1995" and by striking the phrase "$250,000,000 on October 1, 1993, and $250,000,000 on October 1, 1994" and inserting "$125,000,000 on October 1, 1993, $275,000,000 on October 1, 1994, and $100,000,000 on October 1, 1995".

Public Law 103-332

Public Law 103-332, 108 Stat. 2499 (1994)

CLEAN COAL TECHNOLOGY

The first paragraph under this head in Public Law 101-512, as amended, is further amended by striking the phrase "$100,000,000 on October 1, 1994, and $50,000,000 on October 1, 1995" and inserting "$18,000,000 on October 1, 1994, $100,000,000 on October 1, 1995, and $32,000,000 on October 1, 1996"; and by striking the phrase "$275,000,000 on October 1, 1994, and $100,000,000 on October 1, 1995" and inserting "$19,121,000 on October 1, 1994, $100,000,000 on October 1, 1995, and $255,879,000 on October 1, 1996": Provided, That not to exceed $18,000,000 available in fiscal year 1995 may be used for administrative oversight of the Clean Coal Technology program.

Public Law 104-6

Public Law 104-6, 109 Stat. 73 (1995)

CLEAN COAL TECHNOLOGY
(RESCISSION)

Of the funds made available under this heading for obligation in fiscal year 1996, $50,000,000 are rescinded and of the funds made available under this heading for obligation in fiscal year 1997, $150,000,000 are rescinded: Provided, That funds made available in previous appropriations Acts shall be available for any ongoing project regardless of the separate request for proposal under which the project was selected.

Public Law 104-134

Conference Report (H.R. Conf. Rep. No. 402, 104th Cong., 1st Sess. [1995])

The managers do not object to the use of up to $18,000,000 in clean coal technology program funds for administration of the clean coal program.

Public Law 104-208

Public Law 104-208, 110 Stat. 3009 (1999)

CLEAN COAL TECHNOLOGY
(RESCISSION)

Of the funds made available under this heading for obligation in fiscal year 1997 or prior years, $123,000,000 are rescinded: *Provided*, That funds made available in previous appropriations Acts shall be available for any ongoing project regardless of the separate request for proposal under which the project was selected.

Conference Report (H.R. Conf. Rep. No. 863, 104th Cong., 2nd Sess., [1996])

CLEAN COAL TECHNOLOGY
(RESCISSION)

Of the funds made available under this heading for obligation in fiscal year 1997 or prior years, $123,000,000 are rescinded: Provided, That funds made available in previous appropriations Acts shall be available for any ongoing project regardless of the separate request for proposal under which the project was selected.

Senate Report (S. Rep. No. 319, 104th Cong., 2nd Sess. [1996])

The Committee does not object to the use of up to $16,000,000 in available funds for administration of the clean coal program in fiscal year 1997.

House Report (H.R. Rep. No. 625, 104th Cong., 2nd Sess. [1996])

The Committee does not object to the use of up to $16,000,000 in available funds for administration of the clean coal program in fiscal year 1997.

Public Law 105-18

Public Law 105-18, 111 Stat. 158 (1997)

CLEAN COAL TECHNOLOGY
(RESCISSION)

Of the funds made available under this heading for obligation in fiscal year 1997 or prior years, $17,000,000 are rescinded: *Provided*, That funds made available in previous appropriations Acts shall be available for any ongoing project regardless of the separate request for proposal under which the project was selected.

Public Law 105-83

Public Law 105-83, 111 Stat. 37 (1997)

Of the funds made available under this heading for obligation in fiscal year 1997 or prior years, $101,000,000 are rescinded: *Provided*, That funds made available in previous appropriations Acts shall be available for any ongoing project regardless of the separate request for proposal under which the project was selected.

Public Law 105-277

Public Law 105-277, 112 Stat. 2681 (1998)

CLEAN COAL TECHNOLOGY
(DEFERRAL)

Of the funds made available under this heading for obligation in prior years, $10,000,000 of such funds shall not be available until October 1, 1999; $15,000,000 shall not be available until October 1, 2000; and $15,000,000 shall not be available until October 1, 2001: Provided, That funds made available in previous appropriations Acts shall be available for any ongoing project regardless of the separate request for proposal under which the project was selected.

Conference Report (H.R. Conf. Rep. No. 825, 105th Cong. 2nd Sess. [1998])

CLEAN COAL TECHNOLOGY

The conference agreement provides for the deferral of $40,000,000 in previously appropriated funds for the clean coal technology program as proposed by the Senate. The House did not propose to defer funding. The Committees agree that $14,900,000 may be used for administration of the clean coal technology program.

Public Law 106-113

Public Law 106-113, ___ Stat. ___ (1999)

CLEAN COAL TECHNOLOGY
(DEFERRAL)

Of the funds made available under this heading for obligation in prior years, $156,000,000 shall not be available until October 1, 2000: *Provided*, That funds made available in previous appropriations Acts shall be available for any ongoing project regardless of the separate request for proposal under which the project was selected.

Conference Report (H.R. Rep. No. 406, 106th Cong., 1st Sess. [1999])

CLEAN COAL TECHNOLOGY
(DEFERRAL)

The conference agreement provides for the deferral of $156,000,000 in previously appropriated funds for the clean coal technology program as proposed by the Senate instead of a deferral of $256,000,000 as proposed by the House. The managers agree that up to $14,400,00 may be used for program direction.

Appendix B: Program History

Solicitation History

The objective of the CCT-I solicitation, issued February 17, 1986, was to seek cost-shared projects to demonstrate the feasibility of clean coal technologies for commercial applications. The Program Opportunity Notice (PON) elicited 51 proposals. Nine projects were selected and 14 projects were placed on a list of alternatives in the event negotiations on the original 9 projects were unsuccessful; 8 alternate projects were eventually selected as replacement projects. Projects were selected from the list of alternates on three separate occasions.

The CCT-II PON, issued February 22, 1988, solicited cost-shared, innovative clean coal technology projects to demonstrate technologies that were capable of being commercialized in the 1990s, more cost-effective than current technologies, and capable of achieving significant reductions in SO_2 and/or NO_x emissions from existing coal-burning facilities, particularly those that contribute to transboundary air pollution. The CCT-II PON was the first solicitation implementing the recommendations of the U.S. and Canadian Special Envoys' report on acid rain. DOE received 55 proposals and selected 16 as best furthering the goals and objectives of the PON (no alternates were selected).

The objective of the CCT-III PON, issued May 1, 1989, was to solicit cost-shared clean coal technology projects to demonstrate innovative, energy-efficient technologies capable of being commercialized in the 1990s. These technologies were to be capable of (1) achieving significant reductions in emissions of SO_2 and/or NO_x from existing facilities to minimize environmental impacts, such as transboundary and interstate air pollution; and/or (2) providing for future energy needs in an environmentally acceptable manner. DOE received 48 proposals and selected 13 projects as best furthering the goals and objectives of the PON.

The CCT-IV PON, issued January 17, 1991, solicited proposals to conduct cost-shared clean coal technology projects to demonstrate innovative, energy-efficient, economically competitive technologies. These technologies were to be capable of (1) retrofitting, repowering, or replacing existing facilities while achieving significant reductions in the emissions of SO_2, NO_x, or both, and/or (2) providing for future energy needs in an environmentally acceptable manner. A total of 33 proposals were submitted in response to the PON. Nine projects were selected.

The objective of the CCT-V PON, issued July 6, 1992, was to solicit proposals to conduct cost-shared demonstration projects that significantly advance the efficiency and environmental performance of coal-using technologies and are applicable to either new or existing facilities. In response to the solicitation, DOE received proposals for 24 projects and selected 5 projects.

Selection and Negotiation History

The following is a history of the selection and negotiations for the CCT Program Projects. Data are provided through September 1999.

July 1986
Nine projects were selected under CCT-I (14 alternate projects selected to replace any selected projects if negotiations were unsuccessful).

March 1987
DOE signed cooperative agreements with two CCT-I participants, Coal Tech Corporation (Advanced Cyclone Combustor with Internal Sulfur, Nitrogen, and Ash Control) and The Ohio Power Company (Tidd PFBC Demonstration Project).

June 1987
DOE signed a cooperative agreement with CCT-I participant, The Babcock & Wilcox Company (now McDermott Technology, Inc.) LIMB Demonstration Project Extension and Coolside Demonstration.

July 1987
DOE signed a cooperative agreement with CCT-I participant, Energy and Environmental Research Corporation (Enhancing the Use of Coals by Gas Reburning and Sorbent Injection).

September 1987
General Electric Company withdrew its proposal (Integrated Coal Gasification Steam Injection Gas Turbine Demonstration Plants with Hot Gas Cleanup).

October 1987
Weirton Steel Corporation withdrew its proposal, Direct Iron Ore Reduction to Replace Coke Oven/Blast Furnace for Steelmaking, from further consideration.

Four more CCT-I projects were selected: Colorado-Ute Electric Association, Inc. (Nucla CFB Demonstration Project); TRW, Inc. (Advanced Slagging Coal Combustor Utility Demonstration Project); Minnesota Department of Natural Resources (COREX Ironmaking Demonstration Project); and Foster Wheeler Power Systems, Inc. (Clean Energy IGCC Demonstration Project).

December 1987
DOE signed cooperative agreements with two more CCT-I participants, Ohio Ontario Clean Fuels, Inc., (Prototype Commercial Coal/Oil Coprocessing Project) and Energy International, Inc. (Underground Coal Gasification Demonstration Project).

January 1988
DOE signed a cooperative agreement with The M.W. Kellogg Company and Bechtel Development Company for a CCT-I project, The Appalachian IGCC Demonstration Project.

September 1988
Sixteen projects were selected under CCT-II.

November 1988
DOE signed a cooperative agreement with CCT-I participant, TRW, Inc. (Advanced Slagging Coal Combustor Utility Demonstration Project).

December 1988
Negotiations were terminated with Minnesota Department of Natural Resources (COREX Ironmaking Demonstration Project) under CCT-I.

DOE selected three more CCT-I projects: ABB Combustion Engineering, Inc. and CQ Inc. (Development of the Coal Quality Expert™); Western Energy Company (formerly Rosebud SynCoal Partnership, now Western SynCoal LLC; Advanced Coal Conversion Process Demonstration); and United Coal Company (Coal Waste Recovery Advanced Technology Demonstration).

June 1989
The City of Tallahassee CCT-I project, ACFB Repowering, was selected from the alternate list.

The M.W. Kellogg Company and Bechtel Development Company withdrew their CCT-I project, Clean Energy IGCC Demonstration Project.

September 1989
United Coal Company withdrew its CCT-I project, Coal Waste Recovery Advanced Technology Demonstration.

November 1989
DOE signed a cooperative agreement with CCT-II participant, Bethlehem Steel Corporation (Innovative Coke Oven Gas Cleaning System for Retrofit Applications).

Combustion Engineering, Inc., (CCT-II) withdrew its Postcombustion Sorbent Injection Demonstration Project.

December 1989
Thirteen projects were selected under CCT-III.

DOE signed cooperative agreements with five CCT-II participants: ABB Combustion Engineering, Inc. (SNOX™ Flue Gas Cleaning Demonstration Project); The Babcock & Wilcox Company (SO_x-NO_x-Rox Box™ Flue Gas Cleanup Demonstration Project); Passamaquoddy Tribe (Cement Kiln Flue Gas Recovery Scrubber); Pure Air on the Lake, L.P. (Advanced Flue Gas Desulfurization Demonstration Project); and Southern Company Services, Inc. (Demonstration of Advanced Combustion Techniques for a Wall-Fired Boiler).

Energy International, Inc., withdrew its CCT-I project, Underground Coal Gasification Demonstration Project.

February 1990
Foster Wheeler Power Systems, Inc., withdrew its CCT-I proposal, Clean Energy IGCC Demonstration Project.

April 1990
DOE signed cooperative agreements with three CCT-II participants: The Appalachian Power Company (PFBC Utility Demonstration Project); The Babcock & Wilcox Company (Demonstration of Coal Reburning for Cyclone Boiler NO_x Control); and Southern Company Services, Inc. (Demonstration of Innovative Applications of Technology for the CT-121 FGD Process).

June 1990
DOE signed cooperative agreements with the co-participants of one CCT-I project, ABB Combustion Engineering, Inc. and CQ Inc. (Development of the Coal Quality Expert™), and with two CCT-II participants: Southern Company Services, Inc. (Demonstration of Selective Catalytic Reduction Technology for the Control of NO_x Emissions from High-Sulfur, Coal-Fired Boilers) and TransAlta Resources Investment Corporation (LNS Burner for Cyclone-Fired Boilers Demonstration Project).

September 1990
DOE signed cooperative agreements with one CCT-I participant, Western Energy Company (formerly Rosebud SynCoal Partnership, now Western SynCoal LLC); Advanced Coal Conversion Process Demonstration); one CCT-II participant, Southern Company Services, Inc. (180-MWe Demonstration of Advanced Tangentially-Fired Combustion Techniques for the Reduction of NO_x Emissions from Coal-Fired Boilers); and one CCT-III participant, ENCOAL Corporation (ENCOAL® Mild Coal Gasification Project).

Negotiations were terminated with CCT-II participant, Southwestern Public Service Company (Nichols CFB Repowering Project).

October 1990
DOE signed cooperative agreements with four CCT-III participants: AirPol, Inc. (10-MWe Demonstration of Gas Suspension Absorption); The Babcock & Wilcox Company (Full-Scale Demonstration of Low-NO_x Cell Burner Retrofit); Bechtel Corporation (Confined Zone Dispersion Flue Gas Desulfurization Demonstration); and Energy and Environmental Research Corporation (Evaluation of Gas Reburning and Low-NO_x Burners on a Wall-Fired Boiler).

November 1990
DOE signed cooperative agreements with one CCT-I participant, The City of Tallahassee (Arvah B. Hopkins Circulating Fluidized-Bed Repowering Project; now JEA and the JEA Large-Scale CFB Combustion Demonstration Project); one CCT-II participant, ABB Combustion Engineering, Inc. (Combustion Engineering IGCC Repowering Project); and two CCT-III participants, Bethlehem Steel Corporation (Blast Furnace Granular-Coal Injection System Demonstration Project) and LIFAC–North America (LIFAC Sorbent Injection Desulfurization Demonstration Project).

December 1990
Negotiations terminated with CCT-II participant, Otisca Industries, Ltd. (Otisca Fuel Demonstration Project) and CPICOR.

March 1991
DOE signed cooperative agreements with three CCT-III participants: MK-Ferguson Company (now NOXSO Corporation (Commercial Demonstration of the NOXSO SO_2/NO_x Removal Flue Gas Cleanup System); Public Service Company of Colorado (Integrated Dry NO_x/SO_2 Emissions Control System); and Tampa Electric Company (formerly Clean Power Cogeneration Limited Partnership; now Tampa Electric Integrated Gasification Combined-Cycle Project.

TRW, Inc., withdrew its CCT-I project (Advanced Slagging Coal Combustion Utility Demonstration Project).

April 1991
DOE signed a cooperative agreement with CCT-III participant, Alaska Industrial Development and Export Authority (Healy Clean Coal Project).

June 1991
DOE withdrew its sponsorship of the Ohio Ontario Clean Fuels, Inc., CCT-I project, Prototype Commercial Coal/Oil Coprocessing Plant.

August 1991
DOE signed a cooperative agreement with CCT-III participant, DMEC-1 Limited Partnership (formerly Dairyland Power Cooperative; PCFB Demonstration Project).

TransAlta Resources Investment Corporation withdrew its CCT-II project, LNS Burner for Cyclone-Fired Boilers Demonstration Project.

September 1991
Nine projects were selected under CCT-IV.

Coal Tech Corporation's CCT-I project, Advanced Cyclone Combustor with Internal Sulfur, Nitrogen, and Ash Control, final reports issued and project completed.

April 1992
Tri-State Generation and Transmission Association, Inc.'s (formerly Colorado-Ute Electric Association, Inc.) CCT-I project, Nucla CFB Demonstration Project, final reports issued and project completed.

June 1992
The City of Tallahassee project (CCT-I) was restructured and transferred to York County Energy Partners, L.P. (York County Energy Partners Cogeneration Project).

July 1992
DOE signed cooperative agreements with two CCT-IV participants: Tennessee Valley Authority (now New York State Electric & Gas Corporation; Micronized Coal Reburning Demonstration for NO_x Control on a 175-MWe Wall-Fired Unit), and the Wabash River Coal Gasification Repowering Project Joint Venture (Wabash River Coal Gasification Repowering Project).

August 1992
DOE signed a cooperative agreement with CCT-IV participant, Sierra Pacific Power Company (Piñon Pine IGCC Power Project).

Cordero Mining Company withdrew from negotiations for its CCT-IV project, Cordero Coal-Upgrading Demonstration Project.

At the participant's request, Union Carbide Chemicals and Plastics Company Inc. (CCT-IV) was granted an extension of one year to the DOE deadline for completing negotiations of its Demonstration of the Union Carbide CANSOLVT System at the Alcoa Generating Corporation Warrick Power Plant.

October 1992
DOE signed cooperative agreements with one CCT-III participant, Air Products and Chemicals, Inc. (Commercial-Scale Demonstration of the Liquid Phase Methanol [LPMEOH™] Process) and with four CCT-IV participants: Custom Coals International (Self-Scrubbing Coal™: An Integrated Approach to Clean Air); New York State Electric & Gas Corporation (Milliken Clean Coal Technology Demonstration Project); TAMCO Power Partners (Toms Creek IGCC Demonstration Project); and ThermoChem, Inc. (Pulse Combustor Design Qualification Test).

November 1992
The Babcock & Wilcox Company's (now McDermott Technology, Inc.) CCT-I project, LIMB Demonstration Project Extension and Coolside Demonstration, final reports issued and project completed.

May 1993
Five projects were selected under CCT-V: Four Rivers Energy Partners, L.P. (Four Rivers Energy Modernization Project (formerly Calvert City Advanced Energy Project, now McIntosh Unit 4B Topped PCFB Demonstration Project); Duke Energy Corporation (Camden Clean Energy Demonstration Project); Centerior Energy Corporation, on behalf of CPICOR™ Management Company L.L.C. (Clean Power from Integrated Coal/Ore Reduction [CPICOR™]); Arthur D. Little, Inc. (Clean Coal Combined-Cycle Project; formerly Demonstration of Coal Diesel Technology at Easton Utilities; now Clean Coal Diesel Demonstration Project); and Pennsylvania Electric Company (Warren Station Externally Fired Combined-Cycle Demonstration Project).

July 1993
Union Carbide Chemicals and Plastics Company, Inc., withdrew its CCT-IV proposal, Demonstration of the Union Carbide CANSOLVT System at the Alcoa Generating Corporation Warrick Power Plant.

February 1994
The Passamaquoddy Tribe's CCT-III project, Cement Kiln Flue Gas Recovery Scrubber, final reports issued and project completed.

March 1994
The Babcock & Wilcox Company's CCT-II project, Demonstration of Coal Reburning for Cyclone Boiler NO_x Control, final reports issued and project completed.

June 1994
DOE signed a cooperative agreement with CCT-V participant, Arthur D. Little, Inc. (Coal Diesel Combined-Cycle Project).

Southern Company Services' CCT-III project, 180-MWe Demonstration of Advanced Tangentially-Fired Combustion Techniques for the Reduction of NO_x Emissions from Coal-Fired Boilers, final reports issued and project completed.

Bechtel Corporation's CCT-III project, Confined Zone Dispersion Flue Gas Desulfurization Demonstration, final reports issued and project completed.

August 1994
DOE signed cooperative agreements with two CCT-V participants, Four Rivers Energy Partners, L.P. (Four Rivers Energy Modernization Project); and Pennsylvania Electric Company (Warren Station Externally-Fired Combined-Cycle Demonstration Project).

The CCT-III project, Commercial Demonstration of the NOXSO SO_2/NO_x Removal Flue Gas Cleanup System, was relocated and transferred to NOXSO Corporation.

September 1994
The Air Products and Chemicals CCT-III project, Commercial-Scale Demonstration of the Liquid Phase Methanol (LPMEOH™) Process, was transferred to Air Products Liquid Phase Conversion Company, L.P.

December 1994
DOE signed a cooperative agreement with CCT-V participant, Clean Energy Partners Limited Partnership (formerly Duke Energy Corporation; Clean Energy Demonstration Project; now Kentucky Pioneer IGCC Demonstration Project).

March 1995
TAMCO Power Partner's CCT-IV project, Toms Creek IGCC Demonstration Project, was not granted a further extension and the project was concluded.

April 1995
Bethlehem Steel Corporation's CCT-II project, Innovative Coke Oven Gas Cleaning System for Retrofit Applications, was terminated by mutual agreement with DOE because coke production was suspended at the demonstration facility.

June 1995
AirPol, Inc.'s CCT-II project, 10-MWe Demonstration of Gas Suspension Absorption, final reports issued and project completed.

September 1995
The Babcock & Wilcox Company's CCT-II project, SO_x-NO_x-Rox Box™ Flue Gas Cleanup Demonstration Project, final reports issued and project completed.

December 1995
The Tennessee Valley Authority and New York State Electric & Gas Corporation finalized an agreement to allow the project, Micronized Coal Reburning Demonstration for NO_x Control, to be conducted at both Milliken Station in Lansing, NY and Eastman Kodak Company in Rochester, NY.

The Babcock & Wilcox Company's CCT-II project, Full-Scale Demonstration of Low-NO_x Cell Burner Retrofit, final reports issued and project completed.

The Ohio Power Company's CCT-I project, Tidd PFBC Demonstration Project, final reports issued and project completed.

May 1996
The ABB Combustion Engineering, Inc. CCT-II project, Combustion Engineering IGCC Repowering Project, was concluded.

June 1996
Pure Air on the Lake's CCT-II project, Advanced Flue Gas Desulfurization Project, final reports issued and project completed.

August 1996
The Arthur D. Little, Inc., CCT-V project was restructured and retitled as the Clean Coal Diesel Demonstration Project.

September 1996
The Appalachia Power Company CCT-II project, PFBC Utility Demonstration Project, was concluded.

October 1996
DOE signed a cooperative agreement with CCT-V participant, CPICOR™ Management Company L.L.C. (Clean Power from Integrated Coal/Ore Reduction [CPICOR™]).

November 1996
Southern Company Services' CCT-II project, Demonstration of Selective Catalytic Reduction Technology for the Control of NO_x Emissions from High-Sulfur, Coal-Fired Boilers, final reports issued and project completed.

December 1996
ABB Environmental Systems' CCT-II project, SNOX™ Flue Gas Cleaning Demonstration Project, final reports issued and project completed.

May 1997
The Pennsylvania Electric Company CCT-V project, Externally Fired Combined-Cycle Demonstration Project, was concluded.

September 1997
DOE modified the cooperative agreement for JEA's (formerly Jacksonville Electric Authority) CCT-I project, JEA Large-Scale CFB Combustion Project (formerly The City of Tallahassee project, then the York County Energy Partners project).

December 1997
ENCOAL Corporation's CCT-III project, ENCOAL® Mild Coal Gasification Project, final reports issued and project completed.

DOE signed a new cooperative agreement for the restructured City of Lakeland's CCT-III project, McIntosh Unit 4A PCFB Demonstration Project (formerly the DMEC-1 Limited Partnership project).

January 1998
DOE signed a new cooperative agreement for the restructured City of Lakeland's CCT-III project, McIntosh Unit 4B Topped PCFB Demonstration Project (formerly the Four Rivers Energy Partners, L.P. project).

April 1998
LIFAC–North America's CCT-III project, LIFAC Sorbent Injection Desulfurization Demonstration Project, final reports issued and project completed.

June 1998
Southern Company Services' CCT-II project, Demonstration of Innovative Applications of Technology for the CT-121 FGD Process, final reports issued and project completed.

The ABB Combustion Engineering, Inc. and CQ Inc.'s CCT-I project, Development of the Coal Quality Expert™, final reports issued and project completed.

September 1998
Energy and Environmental Research Corporation's CCT-I project, Enhancing the Use of Coals by Gas Reburning and Sorbent Injection, final reports issued and project completed.

DOE signed a revised cooperative agreement for the restructured ThermoChem Inc.'s CCT IV project, Pulse Combustor Design Qualification test.

October 1998
Energy and Environmental Research Corporation's CCT III project, Evaluation of Gas Reburning and Low-NO_x Burners on a Wall-Fired Boiler, final reports issued and project completed.

September 1999
Energy and Environmental Research Corp.'s CCT-I project, Enhancing the Use of Coals by Gas Reburning and Sorbent Injection, final report issued and project completed.

New York State Electric and Gas Corp.'s CCT-IV project, Milliken Station Clean Coal Technology Project, final report issued and project completed.

New York State Electric and Gas Corp.'s CCT-IV project, Micronized Coal Reburning Demonstration for NO_x Control, final report issued and project completed.

DOE signed a revised cooperative agreement for Southern Company Services, Inc.'s CCT-II project, Demonstration of Advanced Combustion Techniques for a Wall-Fired Boiler, extending the project.

Appendix C: Environmental Aspects

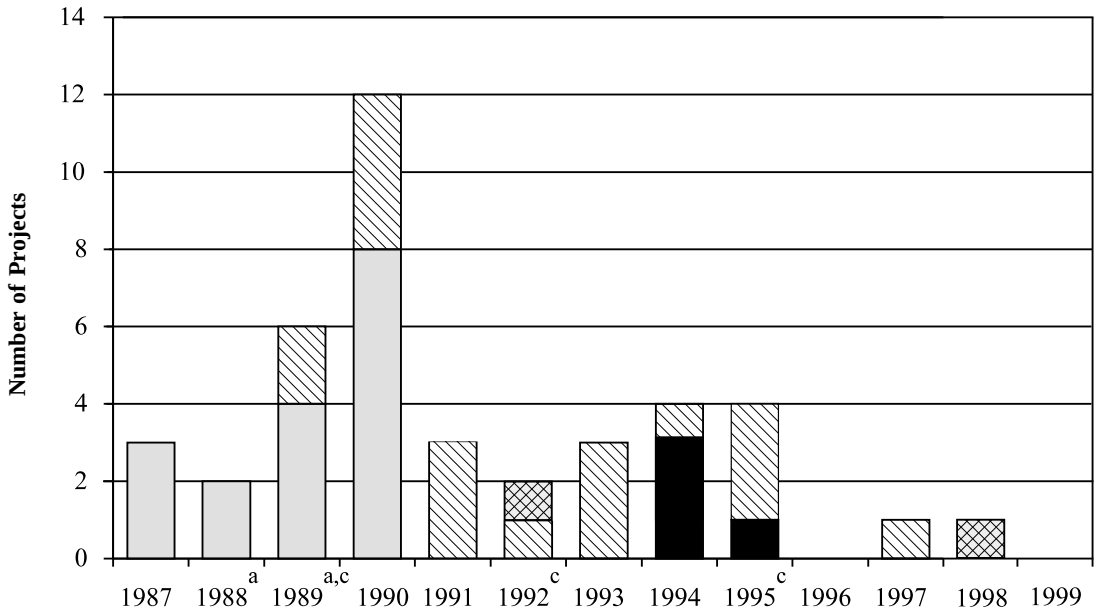
Introduction

The U.S. Department of Energy employs a three-step process to ensure that the CCT Program and its projects comply with the procedural requirements of the National Environmental Policy Act (NEPA), and the regulations for NEPA compliance promulgated by the Council on Environmental Quality (CEQ) (40 CFR Parts 1500–1508) and by DOE (10 CFR Part 1021). This process includes (1) preparation of a programmatic environmental impact statement (PEIS) in 1989; (2) preparation of preselection, project-specific environmental reviews; and (3) preparation of postselection, site-specific NEPA documentation. Several types of NEPA documents have been used in the CCT Program, including memoranda-to-file (MTF; discontinued as of September 30, 1990), environmental assessments (EA), and environmental impact statements (EIS). The Department of Energy's NEPA regulations also provide for categorical exclusions (CX) for certain classes of actions.

Exhibit C-1 shows the progress made through September 30, 1999, to complete NEPA reviews of projects in the CCT Program. By September 30, 1999, NEPA reviews were completed for 35 of the 40 CCT projects remaining in the program (two NEPA reviews were completed for one project, Enhancing the Use of Coals by Gas Reburning and Sorbent Injection—an MTF was completed for the Hennepin site and an EA for the Lakeside site). From 1987 through September 30, 1999, NEPA requirements were satisfied with a CX for 1 project, MTFs for 17 projects, EAs for 18 projects and EISs for 4 projects (actions exceed 33 because of project terminations, withdrawals, and restructuring).

For each project cofunded by DOE under the CCT Program, the industrial participant is required to develop an environmental monitoring plan (EMP) that will ensure operational compliance and that significant technical and environmental data are collected and disseminated. Data to be collected include compliance data to meet federal, state, and local requirements and performance data to aid in future commercialization of the technology.

Exhibit C-1
NEPA Reviews Completed through September 30, 1999



The Role of NEPA in the CCT Program

NEPA was initially enacted in 1969 as Public Law 91-190 and is codified at 42 U.S.C. §4321 *et seq*. The applicability of NEPA to the CCT Program is encapsulated in the following provision (Section 102):

> [A]ll agencies of the Federal Government shall—. . .
>
> (C) include in every recommendation or report on proposals for legislation and other major Federal actions significantly affecting the quality of the human environment, a detailed statement by the responsible official on—
>
> i. the environmental impact of the proposed action,
>
> ii. any adverse environmental effects which cannot be avoided should the proposal be implemented,
>
> iii. alternatives to the proposed action,
>
> iv. the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and
>
> v. any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented. . . .
>
> (E) study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources[.]

Through NEPA, Congress created the CEQ, which has promulgated regulations that ensure compliance with the act.

Compliance with NEPA

In November 1989, a PEIS was completed for the CCT Program. This PEIS addressed issues such as potential global climatic modification and the ecological and socioeconomic impacts of the CCT Program. The PEIS evaluated the following two alternatives:

- "No action," which assumed that conventional coal-fired technologies with conventional flue gas desulfurization controls would continue to be used, and
- "Proposed action," which assumed that successfully demonstrated clean coal technologies would undergo widespread commercialization by the year 2010.

In preselection project-specific environmental reviews, DOE evaluates the environmental aspects of each proposed demonstration project. Reviews are provided to the Source Selection Official for consideration in the project selection process. The site-specific environmental, health, safety, and socioeconomic issues associated with each proposed project are examined during the NEPA review. As part of the comprehensive evaluation prior to selecting projects, the strengths and weaknesses of each proposal are compared with the environmental evaluation criteria. To the maximum extent possible, the environmental impacts of each proposed project and practical mitigating measures are considered. Also, a list of necessary permits is prepared, to the extent known; these are permits that would need to be obtained in implementing the proposed project.

Upon selection, project participants are required to prepare and submit additional environmental information. This detailed site- and project-specific information is used, along with independent information gathered by DOE, as the basis for site-specific NEPA documents that are prepared by DOE for each selected project. These NEPA documents are prepared, considered, and published in full conformance with CEQ and DOE regulations for NEPA compliance.

Categorical Exclusions

"Subpart D—Typical Classes of Actions" of the DOE NEPA regulations provides for categorical exclusions as a class of actions that DOE has determined do not individually or cumulatively have a significant effect on the human environment. Two projects, Micronized Coal Reburning Demonstration for NO_x Control and Pulse Combustor Design Qualification Test, were covered by a categorical exclusion.

Memoranda-to-File

The MTF was established when DOE's NEPA guidelines were first issued in 1980. The MTF was intended for circumstances when the expected impacts of the proposed action were clearly insignificant, yet the action had not been specified as a categorical exclusion from NEPA documentation. The use of the MTF was terminated as of September 30, 1990. Exhibit C-2 lists the 17 projects for which an MTF was prepared.

Environmental Assessments

An EA has the following three functions:

1. To provide sufficient evidence and analysis for determining whether a proposed action requires preparation of an EIS or a finding of no significant impact (FONSI);
2. To aid an agency's compliance with NEPA when no EIS is necessary, *i.e.*, to provide an interdisciplinary review of proposed actions, assess potential impacts, and identify better alternatives and mitigation measures; and

Exhibit C-2
Memoranda-to-File Completed

Project and Participant	Completed
CCT-I	
Development of the Coal Quality Expert™ (ABB Combustion Engineering, Inc. and CQ Inc.)	4/27/90
LIMB Demonstration Project Extension and Coolside Demonstration (McDermott Technology, Inc.)	6/2/87
Advanced Cyclone Combustor with Internal Sulfur, Nitrogen, and Ash Control (Coal Tech Corporation)	3/26/87
Nucla CFB Demonstration Project (Colorado-Ute Electric Association, Inc.; now Tri-State Generation and Transmission Association, Inc.)	4/18/88
Enhancing the Use of Coals by Gas Reburning and Sorbent Injection (Hennepin site) (Energy and Environmental Research Corporation)	5/9/88
Tidd PFBC Demonstration Project (The Ohio Power Company)	3/5/87
CCT-II	
SNOX™ Flue Gas Cleaning Demonstration Project (ABB Environmental Systems)	1/31/90
SO_x-NO_x-Rox Box™ Flue Gas Cleanup Demonstration Project (The Babcock & Wilcox Company)	9/22/89
Demonstration of Advanced Combustion Techniques for a Wall-Fired Boiler (Southern Company Services, Inc.)	5/22/89
Demonstration of Selective Catalytic Reduction Technology for the Control of NO_x Emissions from High-Sulfur, Coal-Fired Boilers (Southern Company Services, Inc.)	8/16/89
180-MWe Demonstration of Advanced Tangentially-Fired Combustion Techniques for the Reduction of NO_x Emissions from Coal-Fired Boilers (Southern Company Services, Inc.)	7/21/89
CCT-III	
10-MWe Demonstration of Gas Suspension Absorption (AirPol, Inc.)	9/21/90
Full-Scale Demonstration of Low-NO_x Cell Burner Retrofit (The Babcock & Wilcox Company)	8/10/90
Confined Zone Dispersion Flue Gas Desulfurization Demonstration (Bechtel Corporation)	9/25/90
Evaluation of Gas Reburning and Low-NO_x Burners on a Wall-Fired Boiler (Energy and Environmental Research Corporation)	9/6/90
LIFAC Sorbent Injection Desulfurization Demonstration Project (LIFAC–North America)	10/2/90
Integrated Dry NO_x/SO_2 Emissions Control System (Public Service Company of Colorado)	9/27/90

3. To facilitate preparation of an EIS when one is necessary.

An EA's contents are determined on a case-by-case basis and depend on the nature of the action. If appropriate, a DOE EA also includes any floodplain or wetlands assessment that has been prepared, and may include analyses needed for other environmental determinations.

If an agency determines on the basis of an EA that it is not necessary to prepare an EIS, a FONSI is issued. Council on Environmental Quality regulations describe the FONSI as a document that briefly presents the reasons why an action will not have a significant effect on the human environment and for which an EIS therefore will not be prepared. The FONSI includes the EA, or a summary of it, and notes any other related environmental documents. The CEQ and DOE regulations also provide for notification of the public that a FONSI has been issued. Also, DOE provides copies of the EA and FONSI to the public on request.

Exhibit C-3 lists the 18 projects for which an EA has been prepared. The exhibit includes EAs for one project that was subsequently withdrawn from the program—TransAlta Resources Investment Corporation's Low-NO_x/SO_2 Burner Retrofit for Utility Cyclone Boilers project—and three that were terminated—ABB Combustion Engineering's Combustion Engineering IGCC Repowering Project, Bethlehem Steel Corporation's Innovative Coke Oven Gas Cleaning System for Retrofit Applications, and Pennsylvania Electric's Warren Station Externally-Fired Combined-Cycle Demonstration Project.

Exhibit C-3
Environmental Assessments Completed

Project and Participant	Completed
CCT-I	
Enhancing the Use of Coals by Gas Reburning and Sorbent Injection (Lakeside site) (Energy and Environmental Research Corporation)	6/25/89
Advanced Coal Conversion Process Demonstration (Western SynCoal LLC)	3/27/91
CCT-II	
Combustion Engineering IGCC Repowering Project (ABB Combustion Engineering, Inc.) (project terminated)	3/27/92
Demonstration of Coal Reburning for Cyclone Boiler NO_x Control (The Babcock & Wilcox Company)	2/12/91
Innovative Coke Oven Gas Cleaning System for Retrofit Applications (Bethlehem Steel Corporation) (project terminated)	12/22/89
Cement Kiln Flue Gas Recovery Scrubber (Passamaquoddy Tribe)	2/16/90
Advanced Flue Gas Desulfurization Demonstration Project (Pure Air on the Lake, L.P.)	4/16/90
Demonstration of Innovative Applications of Technology for the CT-121 FGD Process (Southern Company Services, Inc.)	8/10/90
Low-NO_x/SO_2 Burner Retrofit for Utility Cyclone Boilers (TransAlta Resources Investment Corporation) (project withdrawn)	3/21/91
CCT-III	
Commercial-Scale Demonstration of the Liquid Phase Methanol (LPMEOH™) Process (Air Products Liquid Phase Conversion Company, L.P.)	6/30/95
Blast Furnace Granular-Coal Injection System Demonstration Project (Bethlehem Steel Corporation)	6/8/93
ENCOAL® Mild Coal Gasification Project (ENCOAL Corporation)	8/1/90
Commercial Demonstration of the NOXSO SO_2/NO_x Removal Flue Gas Cleanup System (NOXSO Corporation)	6/26/95
CCT-IV	
Self-Scrubbing Coal™: An Integrated Approach to Clean Air (Custom Coals International)	2/14/94
Milliken Clean Coal Technology Demonstration Project (New York State Electric & Gas Corporation)	8/18/93
Warren Station Externally-Fired Combined-Cycle Demonstration Project (Pennsylvania Electric Company) (Warren Station site) (project terminated)	5/18/95
Wabash River Coal Gasification Repowering Project (Wabash River Coal Gasification Repowering Project Joint Venture)	5/28/93
CCT-V	
Clean Coal Diesel Demonstration Project (Arthur D. Little, Inc.)	6/2/97

Environmental Impact Statements

The primary purpose of an EIS is to serve as an action-forcing device to ensure that the policies and goals defined in NEPA are infused into the programs and actions of the federal government. An EIS contains a full and fair discussion of all significant environmental impacts. The EIS should inform decision makers and the public of reasonable alternatives that would avoid or minimize adverse impacts or enhance the quality of the human environment.

The CEQ regulations state that an EIS is to be more than a disclosure document; it is to be used by federal officials in conjunction with other relevant material to plan actions and make decisions. Analysis of alternatives is to encompass those alternatives to be considered by the ultimate decision maker, including a complete description of the proposed action. In short, the EIS is a means of assessing the environmental impacts of a proposed DOE action (rather than justifying decisions already made), prior to making a decision to proceed with the proposed action. Consequently, before a record of decision (ROD) is issued, DOE may not take any action that would have an adverse environmental effect or limit the choice of reasonable alternatives. As seen in Exhibit C-4, the EISs for three projects were completed in 1994. In 1995, DOE issued a ROD on the EIS prepared for the York County Energy Partners project located in York County, Pennsylvania. However, because this project has been restructured, a new NEPA compliance document will be required for the JEA project site.

NEPA Actions in Progress

Exhibit C-5 lists the status of projects for which the NEPA process has not yet been completed.

Exhibit C-4
Environmental Impact Statements Completed

Project and Participant	Completed*
CCT-I	
York County Energy Partners Cogeneration Project (York County, PA site) (York County Energy Partners, L.P.) (project relocated)	8/11/95
CCT-III	
Healy Clean Coal Project (Alaska Industrial Development and Export Authority)	3/10/94
Tampa Electric Integrated Gasification Combined-Cycle Project (Tampa Electric Company)	8/17/94
CCT-IV	
Piñon Pine IGCC Power Project (Sierra Pacific Power Company)	11/8/94

* Completion is the date DOE issued a record of decision.

Exhibit C-5
NEPA Reviews in Progress

Project and Participant	Status
CCT-I	
JEA Large-Scale CFB Combustion Demonstration Project	EIS planned (4/00)
CCT-III	
McIntosh Unit 4A PCFB Demonstration Project (Lakeland, City of, Lakeland Electric)	EIS planned (10/00)
CCT-V	
McIntosh Unit 4B Topped PCFB Demonstration Project (Lakeland, City of, Lakeland Electric)	EIS planned (10/00)
Clean Power from Integrated Coal/Ore Reduction (CPICOR™) (CPICOR™ Management Company L.L.C.)	EIS planned (12/00)
Kentucky Pioneer Energy IGCC Demonstration Project (Kentucky Pioneer Energy, L.L.C.)	To be determined

Environmental Monitoring

CCT project participants are required to develop and implement an EMP that addresses both compliance and supplemental monitoring. Exhibit C-6 lists the status of EMPs for all 40 projects in the CCT Program. The EMP is intended to ensure collection and dissemination of the significant technology-, project-, and site-specific environmental data necessary for evaluation of impacts upon health, safety, and the environment. Further, the data are used to characterize and quantify the environmental performance of the technology in order to evaluate its commercialization and deployment potential. In addition to regulatory compliance data, further monitoring is required to fulfill the following:

- Ensure that emissions, ambient levels of pollutants, and environmental impacts do not exceed expectations projected in the NEPA documents,
- Identify any need for corrective action,
- Verify the implementation of any mitigative measure that may have been identified in a mitigation action plan pursuant to the provisions of an EA or EIS, and
- Provide the essential data on the environmental performance of the technology needed to evaluate the potential impact of future commercialization, including the ability of the technology to meet requirements of the Clean Air Act and the 1990 amendments.

The objective of the CCT Program's environmental monitoring efforts is to ensure that, when commercially available, clean coal technologies will be capable of responding fully to air toxics regulations that emerge from the CAAA, and to the maximum extent possible, are in the vanguard of cost-effective solutions to concerns about public health and safety related to coal use.

Air Toxics

Title III of the CAAA lists known hazardous air pollutants (HAPs) and, among other things, calls for the EPA to establish categories of sources that emit these pollutants. Exploratory analyses suggest that HAPs may be released by conventional coal-fired power plants and, presumably, by plants using clean coal technologies. It is expected that emissions standards will be proposed for the electric-power-production-source categories. However, there are many uncertainties as to which HAPs will be regulated, their prevalence in various types and sources of coal, and their nature and fate as functions of combustion characteristics and the particular clean coal technology used.

The CCT Program recognizes the importance of monitoring HAPs in achieving widespread commercialization in the late 1990s and beyond. For all projects with existing cooperative agreements, DOE sought to include HAPs monitoring. A total of 20 projects contain provisions for monitoring HAPs.

The CCT-V Program Opportunity Notice (PON) acknowledged the importance of HAPs throughout the solicitation, including them as an aspect of proposal evaluation. The PON addressed the control of air toxics as an environmental performance criterion. Also, in the instructions on proposal preparation, the PON directed proposers as follows:

> With respect to emission of air toxics, Proposers should consider . . . the particular elements and compounds [listed in Table 5-1 of the PON, "Specific Air Toxics to be Monitored"]. Proposers should present any information known concerning the reduction of emissions of these toxics by [the proposed] technology. Some of the toxics for which the proposed technology may offer control are likely unregulated in the target market at present. The significance and importance of the additional control afforded by the proposed technology for the continued use of coal should be explained. An example of this kind would be one or more particular air toxic compounds controlled by a technology meant for use in power generation.

The CCT-V PON also stipulates that information on air toxics be presented in the environmental information required by DOE. Exhibit C-7 lists the 20 projects that provide for HAPs monitoring. Eleven of these projects have completed the HAPs monitoring requirements. The objective of the HAPs monitoring program is to improve the quality of HAPs data being gathered and to monitor a broader range of plant configurations and emissions control equipment.

The CCT Program is coordinating with organizations such as the Electric Power Research Institute (EPRI) and the Ohio Coal Development Office in activities focused on HAPs monitoring and analysis. Further, under the DOE Coal R&D Program, two reports summarizing the source, distribution, and fate of HAPs from coal-fired power plants were published in 1996. A report released in July 1996, *Summary of Air Toxics Emissions Testing at Sixteen Utility Plants*, provided assessment of HAPs measured in the coal, across the major pollution control devices, and the HAPs emitted from the stack. A second report, *A Comprehensive Assessment of Toxics Emissions from Coal-Fired Power Plants: Phase I Results from the*

Exhibit C-6
Status of Environmental Monitoring Plans for CCT Projects

Project and Participant	Status
CCT-I	
Development of the Coal Quality Expert™ (ABB Combustion Engineering, Inc. and CQ Inc.)	Completed 7/31/90
LIMB Demonstration Project Extension and Coolside Demonstration (McDermott Technology, Inc.)	Completed 10/19/88
Advanced Cyclone Combustor with Internal Sulfur, Nitrogen, and Ash Control (Coal Tech Corporation)	Completed 9/22/87
Nucla CFB Demonstration Project (Colorado-Ute Electric Association, Inc.; now Tri-State Generation and Transmission Association, Inc.)	Completed 2/27/88
Enhancing the Use of Coals by Gas Reburning and Sorbent Injection (Energy and Environmental Research Corporation)	Completed 10/15/89 (Hennepin) Completed 11/15/89 (Lakeside)
Tidd PFBC Demonstration Project (The Ohio Power Company)	Completed 5/25/88
Advanced Coal Conversion Process Demonstration (Western SynCoal LLC)	Completed 4/7/92
JEA Large-Scale CFB Combustion Demonstration Project (JEA)	Projected 6/01
CCT-II	
SNOX™ Flue Gas Cleaning Demonstration Project (ABB Environmental Systems)	Completed 10/31/91
Demonstration of Coal Reburning for Cyclone Boiler NO_x Control (The Babcock & Wilcox Company)	Completed 11/18/91
SO_x-NO_x-Rox Box™ Flue Gas Cleanup Demonstration Project (The Babcock & Wilcox Company)	Completed 12/31/91
Cement Kiln Flue Gas Recovery Scrubber (Passamaquoddy Tribe)	Completed 3/26/90
Advanced Flue Gas Desulfurization Demonstration Project (Pure Air on the Lake, L.P.)	Completed 1/31/91
Demonstration of Advanced Combustion Techniques for a Wall-Fired Boiler (Southern Company Services, Inc.)	Completed 9/14/90
Demonstration of Innovative Applications of Technology for the CT-121 FGD Process (Southern Company Services, Inc.)	Completed 12/18/90
Demonstration of Selective Catalytic Reduction Technology for the Control of NO_x Emissions from High-Sulfur-Coal-Fired Boilers (Southern Company Services, Inc.)	Completed 3/11/93
180-MWe Demonstration of Advanced Tangentially-Fired Combustion Techniques for the Reduction of NO_x Emissions from Coal-Fired Boilers (Southern Company Services, Inc.)	Completed 12/27/90

Exhibit C-6 (continued)
Status of Environmental Monitoring Plans for CCT Projects

Project and Participant	Status
CCT-III	
Commercial-Scale Demonstration of the Liquid Phase Methanol (LPMEOH™) Process (Air Products Liquid Phase Conversion Company, L.P.)	Completed 8/29/96
10-MWe Demonstration of Gas Suspension Absorption (AirPol, Inc.)	Completed 10/2/92
Healy Clean Coal Project (Alaska Industrial Development and Export Authority)	Completed 4/11/97
Full-Scale Demonstration of Low-NO_x Cell Burner Retrofit (The Babcock & Wilcox Company)	Completed 8/9/91
Confined Zone Dispersion Flue Gas Desulfurization Demonstration (Bechtel Corporation)	Completed 6/12/91
Blast Furnace Granular-Coal Injection System Demonstration Project (Bethlehem Steel Corporation)	Completed 12/23/94
McIntosh Unit 4A PCFB Demonstration Project (Lakeland, City of, Lakeland Electric)	Projected 8/01
ENCOAL® Mild Coal Gasification Project (ENCOAL Corporation)	Completed 5/29/92
Evaluation of Gas Reburning and Low-NO_x Burners on a Wall-Fired Boiler (Energy and Environmental Research Corporation)	Completed 7/26/90
LIFAC Sorbent Injection Desulfurization Demonstration Project (LIFAC–North America)	Completed 6/12/92
Integrated Dry NO_x/SO_2 Emissions Control System (Public Service Company of Colorado)	Completed 8/5/93
Tampa Electric Integrated Gasification Combined-Cycle Project (Tampa Electric Company)	Completed 5/96
Commercial Demonstration of the NOXSO SO_2/ NO_x Removal Flue Gas Cleanup System (NOXSO Corporation)	To be determined
CCT-IV	
Micronized Coal Reburning Demonstration for NO_x Control (New York State Electric & Gas Corporation)	Completed 8/97
Milliken Clean Coal Technology Demonstration Project (New York State Electric & Gas Corporation)	Completed 12/1/94
Piñon Pine IGCC Power Project (Sierra Pacific Power Company)	Projected 12/31/00
Wabash River Coal Gasification Repowering Project (Wabash River Coal Gasification Repowering Project Joint Venture)	Completed 7/9/93
Pulse Combustor Design Qualification Test (ThermoChem, Inc.)	To be determined
Self-Scrubbing Coal™: An Integrated Approach to Clean Air (Custom Coals International)	To be determined
CCT-V	
Clean Coal Diesel Demonstration Project (Arthur D. Little, Inc.)	Projected 2/99
Clean Power from Integrated Coal/Ore Reduction (CPICOR™) (CPICOR™ Management Company L.L.C.)	Projected 9/02
Kentucky Pioneer Energy IGCC Demonstration Project (Kentucky Pioneer Energy, L.L.C.)	To be determined
McIntosh Unit 4B Topped PCFB Demonstration Project (Lakeland, City of, Lakeland Electric)	Projected 8/03

Exhibit C-7
CCT Projects Monitoring Hazardous Air Pollutants

Application Category	Participant	Project	Status
Advanced Electric Power Generation	Arthur D. Little, Inc.	Clean Coal Diesel Demonstration Project	Planned
	Kentucky Pioneer Energy, L.L.C.	Kentucky Pioneer Energy IGCC Demonstration Project	Planned
	Lakeland, City of, Lakeland Electric	McIntosh Unit 4B Topped PCFB Demonstration Project	Planned
	The Ohio Power Company	Tidd PFBC Demonstration Project	Completed
	Sierra Pacific Power Company	Piñon Pine IGCC Power Project	Planned
	Tampa Electric Company	Tampa Electric Integrated Gasification Combined-Cycle Project	In progress
	Wabash River Coal Gasification Repowering Project Joint Venture	Wabash River Coal Gasification Repowering Project	In progress
	JEA	JEA Large-Scale CFB Combustion Demonstration Project	Planned
Environmental Control Devices	ABB Environmental Systems	SNOX™ Flue Gas Cleaning Demonstration Project	Completed
	AirPol, Inc.	10-MWe Demonstration of Gas Suspension Absorption	Completed
	The Babcock & Wilcox Company	Demonstration of Coal Reburning for Cyclone Boiler NO_x Control	Completed
	The Babcock & Wilcox Company	SO_x-NO_x-Rox Box™ Flue Gas Cleanup Demonstration Project	Completed
	New York State Electric & Gas Corporation	Milliken Clean Coal Technology Demonstration Project	Completed
	Public Service Company of Colorado	Integrated Dry NO_x/SO_2 Emissions Control System	Completed
	Pure Air on the Lake, L.P.	Advanced Flue Gas Desulfurization Demonstration Project	Completed
	Southern Company Services, Inc.	Demonstration of Advanced Combustion Techniques for a Wall-Fired Boiler	Completed
	Southern Company Services, Inc.	Demonstration of Innovative Applications of Technology for the CT-121 FGD Process	Completed
	Southern Company Services, Inc.	180-MWe Demonstration of Advanced Tangentially-Fired Combustion Techniques for the Reduction of NO_x Emissions from Coal-Fired Boilers	Completed
Coal Processing for Clean Fuels	ENCOAL Corporation	ENCOAL® Mild Coal Gasification Project	Completed
Industrial Applications	CPICOR™ Management Company L.L.C.	Clean Power from Integrated Coal/Ore Reduction (CPICOR™)	Planned

U.S. Department of Energy Study, was released in September 1996 and provided the raw data from the emissions testing. Emissions data were collected from 16 power plants, representing nine process configurations, operated by eight different utilities; several power plants were sites for CCT Program projects. The power plants represented a range of different coal types, process configurations, furnace types, and pollution control methods.

The second phase of the DOE/EPRI effort currently in progress is sampling at other sites, including the CCT Program's Wabash River IGCC project. Further, the results from the first phase will be used to determine what configuration and coal types require further assessment.

In October 1996, EPA submitted to Congress an interim version of its technical assessment of toxic air pollutant emissions from power plants, *Study of Hazardous Air Pollutant Emissions from Electric Utility Steam Generating Units, Interim Final Report.* EPA plans to continue evaluating the potential exposures and potential public health concerns from mercury emissions from utilities. In addition, the agency will evaluate information on various potential control technologies for mercury. If EPA decides that HAPs pose a risk, then the agency must propose air toxic emissions controls by November 15, 1998, and make them final two years later.

Following up on the October 1996 report to Congress, a report was released by EPA focusing on Mercury emissions. The December 1997 report, *Mercury Study Report to Congress*, estimates the U.S. industrial sources were responsible for releasing 158 tons of Mercury into the atmosphere in 1994 and 1995. The EPA estimates that 87 percent of those emissions originate from combustion sources such as waste and fossil fuel facilities, 10 percent from manufacturing facilities, 2 percent from area sources, and 1 percent from other sources. The EPA also identified four specific categories that account for about 80 percent of the total anthropogenic sources: coal-fired power plants, 33 percent; municipal waste incinerators, 18 percent; commercial and industrial boilers, 18 percent; and medical waste incinerators, 10 percent. The next step for EPA is to assess the need for enhanced research on health effects and on new pollution control technologies, community "right-to-know" approaches, and regulatory actions.

The results of the HAPs program have significantly mitigated concerns about HAPs emission from coal-fired generation and focused attention on but a few flue gas constituents. The results have the potential to make the forthcoming EPA regulations less strict, which could avoid unnecessary control costs and thus save consumers money on electricity bills.

Appendix D: CCT Project Contacts

Project Contacts

Listed below are contacts for obtaining further information about specific CCT Program demonstration projects. Listed are the name, title, phone number, fax number, mailing address, and e-mail address, if available, for the project participants' contact person. In those instances where the project participant consists of more than one company, a partnership, or joint venture, the mailing address listed is that of the contact person. In addition, the names, phone numbers, and e-mail addresses for contact persons at DOE Headquarters and the National Energy Technology Laboratory (NETL) are provided.

Environmental Control Devices

SO_2 Control Technologies

10-MWe Demonstration of Gas Suspension Absorption

Participant:
AirPol, Inc.

Contacts:
Niels H. Kastrup
(281) 539-3400
(281) 539-3411 (fax)
nhk@flsmiljous.com

FLS miljo, Inc.
100 Glenborough Drive
Houston, TX 77067

Lawrence Saroff, DOE/HQ, (301) 903-9483
lawrence.saroff@hq.doe.gov
James U. Watts, NETL, (412) 386-5991
james.watts@netl.doe.gov

Confined Zone Dispersion Flue Gas Desulfurization Demonstration

Participant:
Bechtel Corporation

Contacts:
Joseph T. Newman, Project Manager
(415) 768-1189
(415) 768-5420 (fax)

Bechtel Corporation
P.O. Box 193965
San Francisco, CA 94119-3965

Lawrence Saroff, DOE/HQ, (301) 903-9483
lawrence.saroff@hq.doe.gov
James U. Watts, NETL, (412) 386-5991
james.watts@netl.doe.gov

LIFAC Sorbent Injection Desulfurization Demonstration Project

Participant:
LIFAC-North America

Contacts:
Dan Stap, Project Manager
(412) 497-2231
(412) 497-2212 (fax)

ICF Kaiser Engineers, Inc.
Gateway View Plaza
1600 West Carson Street
Pittsburgh, PA 15219-1031

Lawrence Saroff, DOE/HQ, (301) 903-9483
lawrence.saroff@hq.doe.gov
James U. Watts, NETL, (412) 386-5991
james.watts@netl.doe.gov

Advanced Flue Gas Desulfurization Demonstration Project

Participant:
Pure Air on the Lake, L.P.

Contacts:
Tim Roth
(610) 481-6257
(610) 481-2762 (fax)

Pure Air on the Lake, L.P.
c/o Air Products and Chemicals, Inc.
7201 Hamilton Boulevard
Allentown, PA 18195-1501

Lawrence Saroff, DOE/HQ, (301) 903-9483
lawrence.saroff@hq.doe.gov
James U. Watts, NETL, (412) 386-5991
james.watts@netl.doe.gov

Demonstration of Innovative Applications of Technology for the CT-121 FGD Process

Participant:
Southern Company Services, Inc.

Contacts:
David P. Burford, Project Manager
(205) 992-6329
(205) 992-7535 (fax)
dpburfor@southernco.com

Southern Company Services, Inc.
P.O. Box 2625
Birmingham, AL 35202-2625

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James U. Watts, NETL, (412) 386-5991
james.watts@netl.doe.gov

NO_x Control Technologies

Micronized Coal Reburning Demonstration for NO_x Control

Participant:
New York State Electric & Gas Corporation

Contacts:
Jim Harvilla
(607) 762-8630
(607) 762-8457 (fax)

New York State Electric & Gas Corporation
Corporate Drive - Kirkwood Industrial Park
P.O. Box 5224
Binghamton, NY 13902-5224

Lawrence Saroff, DOE/HQ, (301) 903-9483
lawrence.saroff@hq.doe.gov
James U. Watts, NETL, (412) 386-5991
james.watts@netl.doe.gov

Demonstration of Coal Reburning for Cyclone Boiler NO_x Control

Participant:
The Babcock & Wilcox Company

Contacts:
Dot K. Johnson
(330) 829-7395
(330) 829-7801 (fax)
dot.k.johnson@mcdermott.com

McDermott Technologies
1562 Beeson Street
Alliance, OH 44601

Lawrence Saroff, DOE/HQ, (301) 903-9483
lawrence.saroff@hq.doe.gov
John C. McDowell, NETL, (412) 386-6175
mcdowell@netl.doe.gov

Full-Scale Demonstration of Low-NO_x Cell Burner Retrofit

Participant:
The Babcock & Wilcox Company

Contacts:
Dot K. Johnson
(330) 829-7395
(330) 829-7801 (fax)
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McDermott Technologies
1562 Beeson Street
Alliance, OH 44601

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James U. Watts, NETL, (412) 386-5991
james.watts@netl.doe.gov

Evaluation of Gas Reburning and Low-NO_x Burners on a Wall-Fired Boiler

Participant:
Energy and Environmental Research Corporation

Contacts:
Blair A. Folsom, Senior Vice President
(949) 859-8851, ext. 140
(949) 859-3194 (fax)

General Electric Energy and Environmental Research Corporation
18 Mason
Irvine, CA 92618

Lawrence Saroff, DOE/HQ, (301) 903-9483
lawrence.saroff@hq.doe.gov
Jerry L. Hebb, NETL, (412) 386-6079
hebb@netl.doe.gov

Demonstration of Selective Catalytic Reduction Technology for the Control of NO_x Emissions from High-Sulfur, Coal-Fired Boilers

Participant:
Southern Company Services, Inc.

Contacts:
Larry Monroe
(205) 257-7772
(205) 257-5367 (fax)

Southern Company Services, Inc.
P.O. Box 2641
Birmingham, AL 35291-8195

Lawrence Saroff, DOE/HQ, (301) 903-9483
lawrence.saroff@hq.doe.gov
James U. Watts, NETL, (412) 386-5991
james.watts@netl.doe.gov

180-MWe Demonstration of Advanced Tangentially-Fired Combustion Techniques for the Reduction of NO_x Emissions from Coal-Fired Boilers

Participant:
Southern Company Services, Inc.

Contacts:
Larry Monroe
(205) 257-7772
(205) 257-5367 (fax)

Southern Company Services, Inc.
P.O. Box 2641
Birmingham, AL 35291-8195

Lawrence Saroff, DOE/HQ, (301) 903-9483
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James U. Watts, NETL, (412) 386-5991
james.watts@netl.doe.gov

Demonstration of Advanced Combustion Techniques for a Wall-Fired Boiler

Participant:
Southern Company Services, Inc.

Contacts:
John N. Sorge, Research Engineer
(205) 257-7426
(205) 257-5367 (fax)

Southern Company Services, Inc.
P.O. Box 2641
Birmingham, AL 35291-8195

Lawrence Saroff, DOE/HQ, (301) 903-9483
lawrence.saroff@hq.doe.gov
James R. Longanbach, NETL, (304) 285-4659
jlonga@netl.doe.gov

Combined SO_2/NO_x Control Technologies

Milliken Clean Coal Technology Demonstration Project

Participant:
New York State Electric & Gas Corporation

Contacts:
Jim Harvilla
(607) 762-8630
(607) 762-8457 (fax)

New York State Electric & Gas Corporation
Corporate Drive-Kirkwood Industrial Park
P.O. Box 5224
Binghamton, NY 13902-5224

Lawrence Saroff, DOE/HQ, (301) 903-9483
lawrence.saroff@hq.doe.gov
James U. Watts, NETL, (412) 386-5991
james.watts@netl.doe.gov

SNOX™ Flue Gas Cleaning Demonstration Project

Participant:
ABB Environmental Systems

Contacts:
Paul Yosick, Project Manager
(423) 693-7550
(423) 694-5203 (fax)

ABB Environmental Systems
1409 Center Point Boulevard
Knoxville, TN 37932

Lawrence Saroff, DOE/HQ, (301) 903-9483
lawrence.saroff@hq.doe.gov
James U. Watts, NETL, (412) 386-5991
james.watts@netl.doe.gov

LIMB Demonstration Project Extension and Coolside Demonstration

Participant:
The McDermott Technology, Inc.

Contacts:
Paul Nolan
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SO_x-NO_x-Rox Box™ Flue Gas Cleanup Demonstration Project

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Enhancing the Use of Coals by Gas Reburning and Sorbent Injection

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Integrated Dry NO_x/SO_2 Emissions Control System

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Commercial Demonstration of the NOXSO SO_2/NO_x Removal Flue Gas Cleanup System

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Advanced Electric Power Generation

Fluidized-Bed Combustion

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Integrated Gasification Combined-Cycle

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Coal Processing for Clean Fuels

Indirect Liquefaction

Commercial-Scale Demonstration of the Liquid Phase Methanol (LPMEOH™) Process

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Advanced Coal Conversion Process Demonstration

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Development of the Coal Quality Expert™

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Mild Gasification

ENCOAL® Mild Coal Gasification Project

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Self-Scrubbing Coal™: An Integrated Approach to Clean Air

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Industrial Applications

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Appendix E: Acronyms, Abbreviations, and Symbols

Acronyms, Abbreviations, and Symbols

°C	degrees Celsius
°F	degrees Fahrenheit
$	dollars (U.S.)
$/kw	dollars per kilowatt
$/ton	dollars per ton
%	percent
®	registered trademark
™	trademark
ABB CE	ABB Combustion Engineering, Inc.
ABB ES	ABB Environmental Systems
ACFB	atmospheric circulating fluidized-bed
ADL	Arthur D. Little, Inc.
AEO99	*Annual Energy Outlook 1999*
AEO2000	*Annual Energy Outlook 2000*
AER98	*Annual Energy Review 1998*
AFBC	atmospheric fluidized-bed combustion
AFGD	advanced flue gas desulfurization
AIDEA	Alaska Industrial Development and Export Authority
AOFA	advanced overfire air
APF	advanced particulate filter
ARIL	Advanced Retractable Injection Lanes
ASME	American Society of Mechanical Engineers
Ass'n.	Association
ATCF	after tax cash flows
atm	atmosphere(s)
avg.	average
BFGCI	blast furnace granular-coal injection
BG	British Gas
BG/L	British Gas/Lurgi
Btu	British thermal unit(s)
Btu/kWh	British thermal units per kilowatt-hour
B&W	The Babcock & Wilcox Company
CAAA	Clean Air Act Amendments of 1990
$CaCO_3$	calcium carbonate (calcitic limestone)
CaO	calcium oxide (lime)
$Ca(OH)_2$	calcium hydroxide (calcitic hydrated lime)
$Ca(OH)_2$•MgO	dolomitic hydrated lime
Ca/N	calcium/nitrogen
CAPI	Clean Air Power Initiative
Ca/S	calcium-to-sulfur
$CaSO_3$	calcium sulfite
$CaSO_4$	calcium sulfate
CCOFA	close-coupled overfire air
CCT	clean coal technology
CCT I	First CCT Program solicitation
CCT II	Second CCT Program solicitation
CCT III	Third CCT Program solicitation
CCT IV	Fourth CCT Program solicitation
CCT V	Fifth CCT Program solicitation
CCT Program	Clean Coal Technology Demonstration Program
CD-ROM	Compact disk-read only memory
CDL®	Coal-Derived Liquid®
CEQ	Council on Environmental Quality
CFB	circulating fluidized-bed
C/H	carbon/hydrogen
CKD	cement kiln dust
CO	carbon monoxide
CO_2	carbon dioxide
COP	Conference of Parties
CT-121	Chiyoda Thoroughbred-121
CQE™	Coal Quality Expert™
CQIM™	Coal Quality Impact Model™
CX	categorical exclusion
CZD	confined zone dispersion
DER	discrete emissions reduction
DME	dimethyl ether
DOE	U.S. Department of Energy
DOE/HQ	U.S. Department of Energy Headquarters
DSE	dust stabilization enhancement
DSI	dry sorbent injection
EA	environmental assessment
EER	Energy and Environmental Research Corporation

EERC	Energy and Environmental Research Center, University of North Dakota
EFCC	externally fired combined cycle
EIA	Energy Information Administration
EIS	environmental impact statement
EIV	Environmental Information Volume
EMP	environmental monitoring plan
EPA	U.S. Environmental Protection Agency
EPAct	Energy Policy Act of 1992
EPDC	Japan's Electric Power Development Company
EPRI	Electric Power Research Institute
ESP	electrostatic precipitator
EWG	exempt wholesale generator
ext.	extension
FBC	fluidized-bed combustion
FCCC	Framework Convention on Climate Change
FeO	iron oxide
Fe_2S	pyritic sulfur
FERC	Federal Energy Regulatory Commission
FETC	Federal Energy Technology Center (now NETL)
FGD	flue gas desulfurization
FONSI	finding of no significant impact
FRP	fiberglass-reinforced plastic
ft, ft^2, ft^3	foot (feet), square feet, cubic feet
FY	fiscal year
gal.	gallon(s)
gal/ft^3	gallons per cubic feet
GB	gigabyte(s)
GE	General Electric
GHG	greenhouse gases
GNOCIS	Generic NO_x Control Intelligence System
gpm	gallons per minute
GR	gas reburning
GR-LNB	gas reburning and low-NO_x burner
GR-SI	gas reburning and sorbent injection
GSA	gas suspension absorption
GVEA	Golden Valley Electric Association
GW	gigawatt(s)
GWe	gigawatt(s)-electric
H_2S	hydrogen sulfide
H_2SO_4	sulfuric acid
HAP	hazardous air pollutant
HCl	hydrogen chloride
HF	hydrogen fluoride
HGPFS	hot gas particulate filter system
HHV	high heating value
hr.	hour(s)
HRSG	heat recovery steam generator
ID	Induced Draft
IEA	International Energy Agency
IEO99	*International Energy Outlook 1999*
IGCC	integrated gasification combined-cycle
in, in^2, in^3	inch(es), square inches, cubic inches
JBR	Jet Bubbling Reactor®
KCl	potassium chloride
K_2SO_4	potassium sulfate
kW	kilowatt(s)
kWh	kilowatt-hour(s)
lb.	pound(s)
L/G	liquid-to-gas ratio
LHV	low heating value
LIMB	limestone injection multistage burner
LNB	low-NO_x burner
LNCB®	low-NO_x cell burner
LNCFS	Low-NO_x Concentric-Firing System
LOI	loss-on-ignition
LPMEOH™	Liquid phase methanol™
LRCWF	low-rank coal-water-fuel
LSFO	limestone forced oxidation
MASB	multi-annular swirl burner
MB	megabyte(s)
MCFC	molten carbonate fuel cell
MDEA	methyldiethanolamine
$MgCO_3$	magnesium carbonate
MgO	magnesium oxide
Mhz	megahertz
mills/kWh	mills per kilowatt hour
min.	minute(s)
mo.	month(s)
MTCI	Manufacturing and Technology Conversion International
MTF	memorandum (memoranda)-to-file
MW	megawatt(s)
MWe	megawatt(s)-electric
MWt	megawatt(s)-thermal
N_2	atmospheric nitrogen
Na/Ca	sodium/calcium
Na_2/S	sodium/sulfur
NaOH	sodium hydroxide
Na_2CO_3	sodium carbonate
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NETL	National Energy Technology Laboratory (formerly FETC)
NH_3	ammonia
Nm^3	Normal cubic meter
NO_2	nitrogen dioxide

NOPR	Notice of Proposed Rulemaking
NO_x	nitrogen oxides
NSPS	New Source Performance Standards
NSR	normalized stoichiometric ratio
NTHM	net tons of hot metal
NTIS	National Technical Information Service
NYSEG	New York State Electric & Gas Corporation
OC&PS	Office of Coal & Power Systems
O&M	operation and maintenance
O_2	oxygen
OTAG	Ozone Transport Assessment Group
OTC	Ozone Transport Commission
PASS	Pilot Air Stabilization System
PC	personal computer
PCAST	Presidential Committee of Advisors on Science and Technology
PCFB	pressurized circulating fluidized bed
PDF®	Process-Derived Fuel®
PEIA	programmatic environmental impact assessment
PEIS	programmatic environmental impact statement
PEOA™	Plant Emission Optimization Advisor™
PENELEC	Pennsylvania Electric Company
PEP	progress evaluation plan
PFBC	pressurized fluidized-bed combustion
PJBH	pulse jet baghouse
PM	particulate matter
PM_{10}	particulate matter less than 10 microns in diameter
$PM_{2.5}$	particulate matter less than 2.5 microns in diameter
PON	program opportunity notice
PRB	Powder River Basin
ppm	parts per million (mass)
ppmv	parts per million by volume
PSCC	Public Service Company of Colorado
PSD	Prevention of Significant Deterioration
psi	pound(s) per square inch
psia	pound(s) per square inch absolute
psig	pound(s) per square inch gauge
PUHCA	Public Utility Holding Company Act of 1935
PURPA	Public Utility Regulatory Policies Act of 1978
QF	qualifying facility
RAM	random access memory
R&D	research and development
RD&D	research, development, and demonstration
REA	Rural Electrification Administration
RP&L	Richmond Power & Light
ROD	Record of Decision
ROM	run-of-mine
rpm	revolutions per minute
RUS	Rural Utility Service
S	sulfur
SBIR	Small Business Innovation Research
scf	standard cubic feet
scfm	standard cubic feet per minute
SCR	selective catalytic reduction
SCS	Southern Company Services, Inc.
SFC	Synthetic Fuels Corporation
S-H-U	Saarberg-Hölter-Umwelttechnik
SI	sorbent injection
SIP	state implementation plan
SM	service mark
SNCR	selective noncatalytic reduction
SNRB™	SO_x-NO_x-Rox Box™
SO_2	sulfur dioxide
SO_3	sulfur trioxide
std ft^3	standard cubic feet
SOFA	separated overfire air
STTR	Small Business Technology Transfer Program
SVGA	super video graphics adapter
TAG™	Technical Assessment Guide™
TCLP	toxicity characteristics leaching procedure
TVA	Tennessee Valley Authority
UAF	University of Alaska, Fairbanks
UARG	Utility Air Regulatory Group
UBCL	unburned carbon losses
U.K.	United Kingdom
UNESCO	United Nations Educational, Scientific and Cultural Organization
U.S.	United States
VFB	vibrating fluidized-bed
VOC	volatile organic compound
WC	water column
WES	wastewater evaporation system
WLFO	wet limestone, forced oxidation
wt.	weight
yr.	year(s)

State Abbreviations

AL	Alabama
AK	Alaska
AZ	Arizona
AR	Arkansas
CA	California
CO	Colorado
CT	Connecticut
DE	Delaware
DC	District of Columbia
FL	Florida
GA	Georgia
HI	Hawaii
ID	Idaho
IL	Illinois
IN	Indiana
IA	Iowa
KS	Kansas
KY	Kentucky
LA	Louisiana
ME	Maine
MD	Maryland
MA	Massachusetts
MI	Michigan
MN	Minnesota
MS	Mississippi
MO	Missouri
MT	Montana
NE	Nebraska
NV	Nevada
NH	New Hampshire
NJ	New Jersey
NM	New Mexico
NY	New York
NC	North Carolina
ND	North Dakota
OH	Ohio
OK	Oklahoma
OR	Oregon
PA	Pennsylvania
PR	Puerto Rico
RI	Rhode Island
SC	South Carolina
SD	South Dakota
TN	Tennessee
TX	Texas
UT	Utah
VT	Vermont
VA	Virginia
VI	Virgin Islands
WA	Washington
WV	West Virginia
WI	Wisconsin
WY	Wyoming

Other

Some companies have adopted an acronym as their corporate names. The following corporate names reflect the former name of the company.

BG/L	British Gas Lurgi
JEA	Jacksonville Electric Authority

Index of CCT Projects and Participants